

Model 101B(a12.6H) Pressure Sensors of Small Diameter

Description

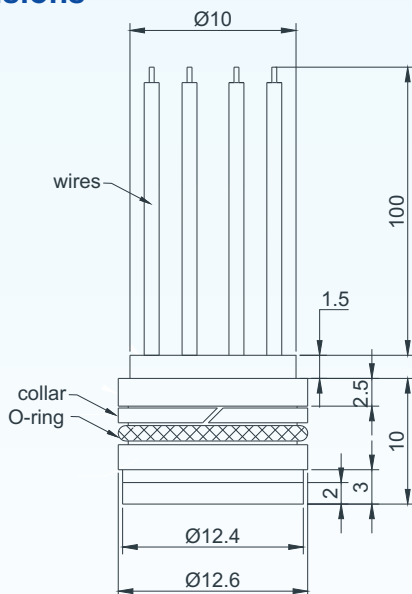
Model 101B(a12.6H) pressure sensor (PS) is designed with a small outer diameter of $\varnothing 12.6\text{mm}$. Compared to 101B(a19G) PS, the feature of a smaller diameter brings the 101B(a12.6H) PS with advantages when the PS is used in applications which have space limitation on the sensor diameter, e.g., to constitute 2-D or 3-D sensor arrays with more sensors in a given space, or to be integrated into a smaller customized housing.

For a volume order, the 101B(a12.6H) PS can also be made of a completely flush diaphragm on request, similar to the diaphragm of 101B(a19F). Such diaphragm is especially useful when the PS measures the pressure either of sticky pressure medium, like viscous paste, or of pressure medium containing solid particles, like wasted water.

Both its diaphragm and its housing are made from 316L stainless steel. Therefore, the 101B(a12.6H) PS can measure pressures of corrosive or/and conductive pressure medium as long as the medium is compatible to 316L stainless steel.

The same as 101B(a19G), the 101B(a12.6H) PS has a piezoresistive pressure sensor die integrated inside the PS and its capsule is filled with un-compressive oil.

Dimensions



Notes:

1. All dimensions are in mm.
2. The sensor will be equipped with the collar if the range $\geq 400\text{bar}$.



Features

- measuring ranges: 10bar, ..., 1000bar
- pressure references:
gauge, absolute, and sealed gauge pressure
- accuracy up to 0.25%fs
- either with or without temperature compensation
- compensated temperature range: $-10 \sim +70 \text{ }^\circ\text{C}$
- outstanding reliability
- excited by either current or voltage

Applications

- process control systems
- industrial controls
- hydraulic controls
- liquid level control
- pressure transducers and transmitters
- pressure calibrators

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

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Model 101B(a12.6H)

Pressure Sensors of Small Diameter



Technical Data

Parameters		Units	Specifications	Notes
pressure medium			compatible with wetted parts material	
pressure references & ranges	gauge	bar	0~10, ~16, ~20, ~35	1
	absolute	bar	0~10, ~16, ~20, ~35, ~70, ~100, ~250, ~400	
	sealed gauge	bar	0~600, ~1000	
proof pressure		%fs	200, 150 in case of ranges \geq 100bar	2
burst pressure		%fs	300, 200 in case of ranges \geq 100bar	
full scale output (fso)		mV	\geq 50	3 & 4
excitation	voltage	Vdc	5 (max. 10)	
	current	mA	1 (max. 2)	
zero offset		mV	\leq \pm 2	4
accuracy		%fs	\pm 0.25 (standard), \pm 0.5	5
long-term stability		%fs/year	\leq \pm 0.1, \leq \pm 0.2 in case of ranges > 250bar	
input resistance		k Ω	5 \pm 3	
output resistance		k Ω	4.5 \pm 1.5	
insulation resistance		M Ω	\geq 100 @250Vdc	
compensated temperature range		$^{\circ}$ C	-10 ~ +70	6
operating temperature range		$^{\circ}$ C	-40 ~ +125	
storage temperature range		$^{\circ}$ C	-40 ~ +125	
temperature drift of zero offset		%fso	\leq \pm 0.8	4 & 7
temperature drift of span		%fso	current excitation: \leq \pm 0.8; voltage excitation: \leq -9.2	4 & 7
life time		cycles	10 ⁸	
response time		ms	\leq 10	8
process sealing			O-ring (fluorine rubber), O-ring with PVDF washer (\geq 250bar)	
electrical interface			4 colored flying wires, silicone rubber, 100mm (standard)	
			5 gold-plated copper pins, Φ 0.5mm, 13mm	
pressure diaphragm			316L SS (standard)	
wetted parts material			316L SS (standard)	
filling oil			silicone oil	
net weight		gram	~12	

General conditions for measurements: media temp. = 25 $^{\circ}$ C \pm 1 $^{\circ}$ C, ambient temp. = 25 $^{\circ}$ C \pm 1 $^{\circ}$ C, humidity = 50%RH \pm 5%RH, barometric pressure: 860~1060mbar, max. vibration = 0.1 g (i.e. 0.98m/s/s).

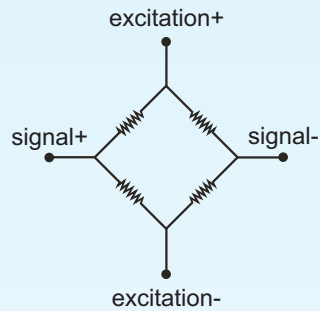
Notes: 1. For customized pressure ranges, consult BCM.

2. "fs" refers to full scale pressure.
3. Measured at fs, i.e. full scale pressure.
4. Measured at 5Vdc excitation.
5. Accuracy = $\sqrt{(\text{non-linearity}^2 + \text{hysteresis}^2 + \text{repeatability}^2)}$.
6. The temperature compensation of the sensor with a voltage excitation covers only compensation on zero offset.
7. Calculated as the maximum change of output signal over the compensated temperature range.
8. Response time for a 0 bar to fs step change, 10% to 90% rise time.

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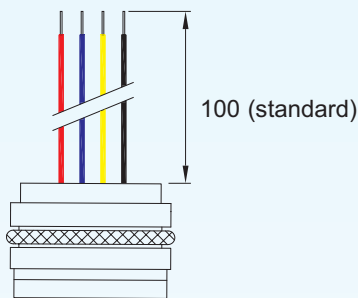
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Circuit Diagram



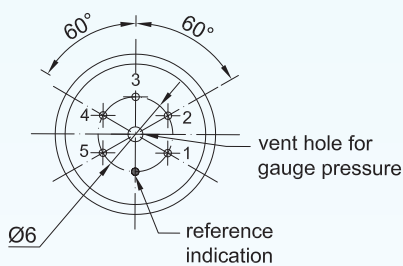
Electrical interface

4-colored flying wires (4F)



wire color	connection
red	excitation +
black	excitation -
yellow	signal +
blue	signal -

5 pins (5P)



pin	connection
1	excitation +
2	signal +
3	excitation -
4	N.C. ⁽¹⁾
5	signal -

- Notes: (1) N.C.: Not connected.
 (2) All dimensions are in mm.
 (3) In case of alterations, refer to the label on the package.

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Ordering Information

position (pos.) 1: model							
101B(a12.6H)							
pos. 2: pressure ranges and references							
10bar	G, A	100bar	A	G: gauge pressure			
16bar	G, A	250bar	A	A: absolute pressure			
20bar	G, A	400bar	A	S: sealed gauge			
35bar	G, A	600bar	S				
70bar	A	1000bar	S				
pos. 3: output signal							
50mV							
pos. 4: accuracy							
0.25%fs (standard) 0.5%fs							
pos. 5: compensation							
T1 = -10~+70°C							
pos. 6: electrical interface							
FW = 4 colored flying silicone rubber wires, 100mm(#) (standard)							
PI = 5 gold-plated copper pins, Φ 0.5mm, 13mm							
#: The wire length can be customized on request.							
pos. 7: excitation							
v = 5Vdc (standard) c = 1mA							
pos. 8: 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

Examples of Ordering Code

- standard sensor:

101B(a12.6H)-25barG-50mV-0.25%fs-NT-FW-v

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

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