Model 101B(c)
Pressure Sensors with Customized Housing

Description

Model 101B(c) pressure sensor (PS) features a customized housing with one of the 101B-series PSs (e.g., 101B(a19G) or 101B(a19L)) integrated in it. As a result, the 101B(c) PS has an inner-cavity structure formed by its housing and the integrated PS. All materials of the inner-cavity are made from 316L stainless steel and will have directly contact to pressure medium. Thanks to the customized housing, a variety of threads (e.g., G1/4) and hexagon (e.g., SW27) can be made for mechanical installation of this PS to fit different pressure applications.

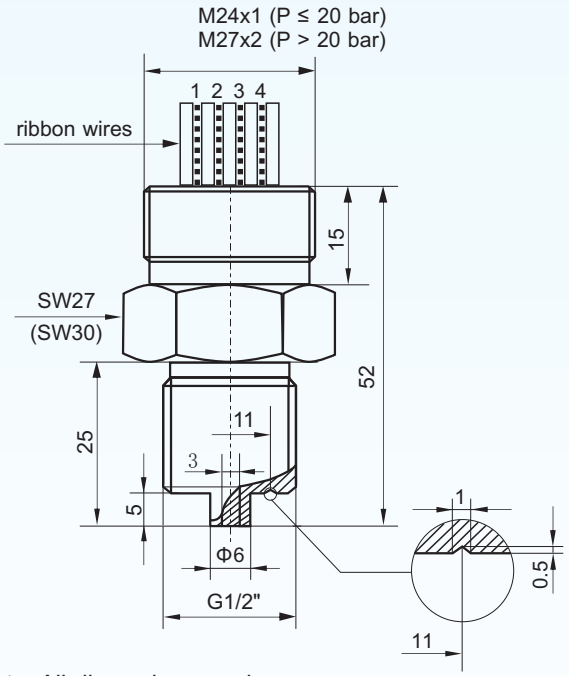
The 101B(c) PS is mostly used to build pressure transmitters by adding both an SSC (sensor signal conditioner) at its backside, a housing for SSC via its M24x1 threads and a connector for both power supply and signal output.

The working pressure will be measured by the integrated PS (e.g., 101B(a19G)), which functions as a core of the101B(c) PS. The working principle of the 101B(c) PS is determined by the integrated PS.

The pressure medium has to be dilute liquid or gas in order to be introduced inside the inner cavity of the 101B(c) PS. Thanks to the stainless steel wetted parts, the pressure medium can be corrosive or conductive as long as it is compatible to 316L stainless steel.

Every 101B(c) PS has been temperature compensated in an analogue way for temperature range of 0~50°C.

Dimensions



Note: All dimensions are in mm.

Features

- pressure types & ranges:
  gauge: -1, ..., 35 bar
  absolute: 1, ..., 35 bar
  sealed gauge: 70, ..., 600 bar
- accuracy up to 0.25%fs
- rugged, isolated stainless steel housing
- outstanding sensitivity and reliability
- temperature compensated
- excited by either current or voltage

Applications

- process control systems
- industrial controls
- pneumatic and hydraulic controls
- 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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Technical Data

Parameter		Units	Specifications	Notes
pressure medium			gases or dilute liquids	1
pressure types & ranges	gauge	bar	-1~0, 0~0.1, ~0.35, ~0.7, ~1, ~2, ~3.5, ~7, ~10, ~20, ~35	2
	absolute	bar	0~1, ~2, ~3.5, ~7, ~10, ~20, ~35	
	sealed gauge	bar	0~70, ~100, ~200, ~350, ~600	
overload pressure		%fs	250 (< 35bar), 150 (⩾ 35bar)	3
full scale output (fso)		mV	⩾ 40, option: 10%~90%Vs ratiometric, I^2C, SPI	4 & 5
excitation	voltage	Vdc	5 (max. 10)	
	current	mA	1 (max. 2)	
zero offset		mV	⩽ ±3	5
accuracy		%fs	⩽ ±0.25, ⩽ ±0.5 (standard)	6
long-term stability		%fs/year	⩽ ±0.2	
bridge resistance		kΩ	3~6	
insulation resistance		MΩ	50 @50Vdc	
compensated temperature range		°C	0~50 (standard)	
operating temperature range		°C	-40 ~ +125	
storage temperature range		°C	-40 ~ +125	
temperature coefficient of zero offset		%fso/°C	⩽ ±0.03 (> 0.35bar), ⩽ ±0.05 (⩽ 0.35bar)	7
temperature coefficient of span		%fso/°C	⩽ ±0.03 (> 0.35bar), ⩽ ±0.05 (⩽ 0.35bar)	7
life time		cycles	10^8	
response time		ms	⩽ 1	8
process connection			G1/2 male, M20x1.5 male (other threads on request)	
connection for housing			M24x1 (other threads on request)	
electrical interface			4 colored flying wires, silicone rubber, 100mm (standard)	
			4 conductor flat-cable, 100mm	
			6 gold-plated copper pins, Φ0.45mm, 13mm	
pressure diaphragm			316L SS	
wetted parts material			316L SS	
filling oil			silicone oil	
net weight		gram	~110	

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 0°C and 50°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.

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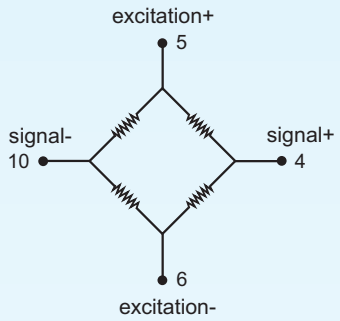
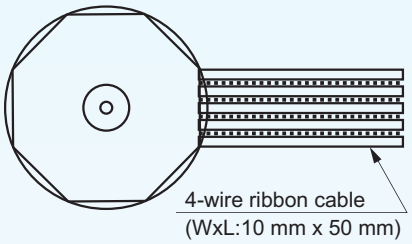
Wheatstone Bridge Circuit



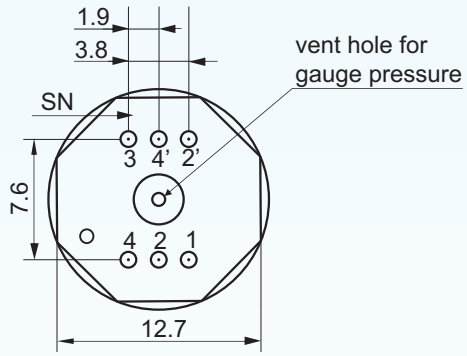
Electrical Interface

4-colored flying wires (4F)



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

6 gold-plated copper pins (6P)



pin	connection
1	signal +
2	excitation +
3	signal -
4	excitation -
2'	no function
4'	no function

Notes: - All dimensions are in mm.

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

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Ordering Information

position (pos.) 1: model

101B(c)

pos. 2: pressure ranges and references

(-1/0)bar	G	2bar	G, A	35bar	G, A	350bar	S	G: gauge pressure
0.1bar	G	3.5bar	G, A	70bar	S	600bar	S	A: absolute pressure
0.35bar	G, A	7bar	G, A	100bar	S			S: sealed gauge
0.7bar	G, A	10bar	G, A	200bar	S			
1bar	G, A	20bar	G, A	250bar	S			

pos. 3: output signal

standard: 40mV
options: 10%/90%Vs(ratiometric) I^2C SPI

pos. 4: accuracy

0.25%fs 0.5%fs (standard)

pos. 5: compensation

T1 = 0 ~ 50 °C (standard)
NT = no temperature compensation

pos. 6: mechanical interface

G1/2(m) = G1/2 male threads (standard)
M20x1.5(m) = M20x1.5 male threads

pos. 7: electrical interface

4F = 4 colored flying silicone rubber wires, 100mm(#) (standard)
4C = 4 conductor flat-cable, 100mm(#)
6P = 6 gold-plated copper pins
If the required output signal is not mV, the electrical interface will be adjusted as the way confirmed on request.
(#): Wire length can be customized,
e.g., 4F(200mm) = 200mm length of flying wires.

pos. 8: excitation

v = 5Vdc (standard) c = 1.5mA

pos. 9: 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

Examples of Ordering Code

- standard sensor:

  101B(c)-10barG-40mV-0.5%fs-T1-G1/2(m)-4F-v

- customized sensor:

  101B(c)-10barG-10%/90%Vs-0.5%fs-T1-G1/4(m)-3F(50mm)-v-(*)

  (*): - Customized output signal = 10%~90%Vs ratiometric;
  - Electrical interface = 3 colored flying wire;
  - Wire length = 50mm.

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

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