

Model 101B-b1

Screw-in Flush Diaphragm Pressure Sensors



101B-b1 screw-in pressure sensors (PS) are flush diaphragm PS. These sensors can be manufactured to have either a flush diaphragm with a fasten ring (type IIa), or a flush diaphragm without fasten ring (type IIb). The diaphragm of the PS is made from 316L SS. Tantalum diaphragm is available on request.

101B-b1 screw-in PS have a standard G1/2 male thread as the process interface, and an M24x1 male thread as the installation thread. These sensors have a full-welded construction and no O-ring is present inside the PS housing. The integrated structure makes 101B-b1 screw-in PS suitable to be used in applications where higher environment protection level or long service life is required.

101B-b1 screw-in PS can be configured to measure gauge, absolute or sealed gauge pressure. Wide measuring pressure ranges from 0~0.2 to 0~100 bar are available with a measuring accuracy up to 0.25 %fs (fs = full scale). The bridge circuit of the sensor can be excited by either constant current or constant voltage.



type IIa

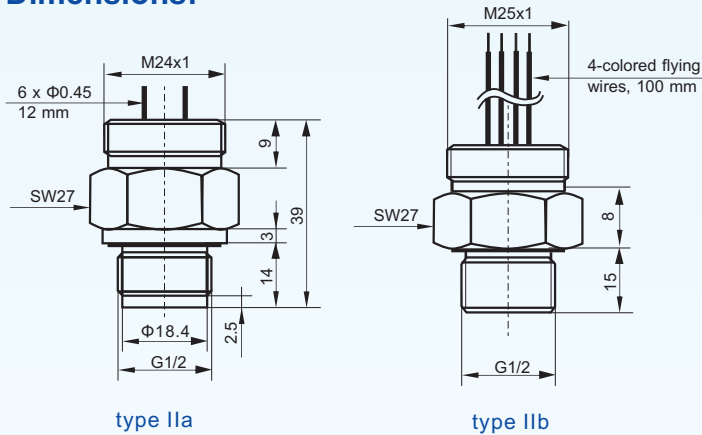
flush diaphragm
with a fasten ring



type IIb

flush diaphragm
without fasten ring

Dimensions:



type IIa

type IIb

Features:

- Full-welded construction, flush diaphragm
- No O-ring inside the housing
- Constant current or voltage for bridge circuit excitation
- Measuring ranges & types:
 - gauge: 0~0.2, ..., 0~35 bar
 - absolute: 0~1, ..., 0~35 bar
 - sealed gauge: 0~35, ..., 0~100 bar
- Accuracy up to 0.25 %fs

Applications:

- Process control systems
- Level systems
- Hydraulic systems and valves
- Biomedical instruments

Physical properties:

- Diaphragm: 316L SS (standard), Tantalum
- Pressure port: 1Cr18Ni9Ti (standard), Hastelloy C
- Connecting Pins: Gold-plated Kovar
- Fill Fluid: Silicon oil < 0.5CC
- Laser trim board: Ceramic
- Weight: 131 g

Environmental conditions:

- Position Effect: <0.1% of Zero shift for 90° tilt in any direction
- Vibration Effect: No change at 10gs' RMS, 20~2000 Hz
- Shock: 100g, for 10 millisecond
- Life: 100 million cycles

Reference specifications:

- Media Temperature: 25 ± 1 °C
- Ambient Temperature: 25 ± 1 °C
- Vibration: 0.1 g (1m/s/s) max
- Humidity: 50% ± 10%
- Ambient Pressure: 86 ~ 106 kPa
- Excitation Source: 1.5 ± 0.0015 mA dc

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Technical data:

parameters	units	specifications
pressure medium		viscous fluid or fluid with grains, compatible with the wetted parts
pressure ranges & types*	bar, G	0~0.2, 0~0.35, 0~0.7, 0~1, 0~2, 0~3.5, 0~7, 0~10, 0~20, 0~35
	bar, A	0~0.7, 0~1, 0~2, 0~3.5, 0~7, 0~10, 0~20, 0~35
	bar, SG	0~35, 0~70, 0~100
overload pressure	%fs	200
full scale output (@ 1.5 mA)	mVdc	≥ 60
zero offset	mVdc	± 1, ± 2 (standard), ± 5
accuracy	%fs	± 0.25, ± 0.5(standard)
long-term stability	%fso/year	0.2 (standard), 0.3
life time	cycles	10 ⁸
response time	ms	≥1 (10% ~ 90% of leading edge)
excitation	mA, recommended	0.5, ..., 2
	Vdc	5, ..., 10
input resistance	Ω	5000 ± 3000
output resistance	Ω	4500 ± 1000
insulation resistance	MΩ @ 500 V dc	500
storage temperature range	°C	- 40 ~ +125
operating temperature range	°C	- 40 ~ +120
compensated temperature range	°C	0~50
temperature coefficient of ZERO	%fso/°C	± 0.03 (standard), ± 0.04
temperature coefficient of SPAN	%fso/°C	± 0.03 (standard), ± 0.04
pressure interface		G1/2 male
electrical interface	for type IIa	6P (6 gold-plated kovar pins, Φ0.45, 12 mm, for current excitation only) 5P (5 gold-plated kovar pins, Φ0.45, 12 mm, for voltage excitation only) 4R (4-wire ribbon cable, width x length = 10 x 50 mm)
	for type IIa & IIb	4F (4 colored PVC flexible wires, length = 100 mm)
installation thread		M24X1 male (type IIa), M25x1 male (type IIb)
diaphragm material		316L SS (standard), Tantalum
pressure port material		1Cr18Ni9Ti (standard), Hastelloy-C
net weight	gram	~ 131

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

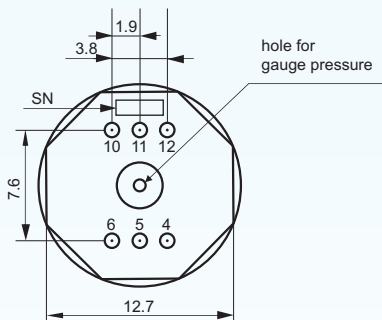
Reference of test conditions: excitation = 1.5 mA, T = 25 °C, humidity = 60 %RH.

*: Pressure range of 0~100 bar is only available for type IIa.

The negative pressure measurement is available on request for gauge pressure application.

Electronic connections:

6-pin configuration: for type IIa & current excitation only



pin	connection	color
4	signal +	red
5	excitation +	black
6	excitation -	yellow
10	signal -	blue
11	N.C. (*)	N.A. (**)
12	N.C. (*)	N.A. (**)

* N.C.: not connected

** N.A.: not available

5-pin configuration: for type IIa & voltage excitation only

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

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Ordering codes system:

example: 101B-b1(type IIa) - 20 - G - II - 5P - c - Cxxxx

port types
type IIa = flush diaphragm with a fasten ring
type IIb = flush diaphragm without the fasten ring

pressure ranges & available pressure types	
0.2 = 0~0.2 bar G	7 = 0~7 bar G, A
0.4 = 0~0.4 bar G	10 = 0~10 bar G, A
0.6 = 0~0.6 bar G, A	20 = 0~20 bar G, A
1 = 0~1 bar G, A	35 = 0~35 bar G, A, S
2 = 0~2 bar G, A	70 = 0~70 bar S
3.5 = 0~3.5 bar G, A	100* = 0~100 bar S

pressure types
G = gauge (relative) pressure
A = absolute pressure
S = sealed gauge pressure

accuracy	
II = 0.25 %fs	III = 0.5 %fs

electrical interface
6P = 6 gold-plated kovar pins (for type IIa & current excitation only)
5P = 6 gold-plated kovar pins (for type IIa & voltage excitation only)
4R = 4-wire ribbon cable (width x length: 10 x 50 mm) (for type IIA)
4F = 4 colored PVC flying wires, 100 mm (for type IIa & IIb)

excitation	
c = 0.5, ..., 2 mA (recommended)	v = 5, ..., 10 V

Cxxxx: This is a customized code given by the customer who can use this code to indicate his desired/wished specifications of the sensor to be ordered on his order sheet. The code starts with a "C" and is followed by 4 digits, the customer can use the 4 digits to indicate the month and date when he requests this customized specifications. The sales team of BCM will confirm this customized specifications when sending BCM's <<Order Confirmation>>.

Note: *: Only available for 101B-b1 (type IIa).

Ordering Code Explanations: 101B-b1(type IIa) - 20 - G - II - 5P - c - C0116

The ordered 101B-b1 screw-in pressure sensor is made to have a fasten ring on top of the flush diaphragm. This sensor is a gauge pressure sensor with the measuring range of 0~20 bar. The measuring accuracy is 0.25 %fs. The electrical interface is 5 gold-plated kovar pins. The bridge circuit of the sensor is excited by constant current. The customer has indicated on January 16th the customized specifications on his order sheet. These customized specifications has to be confirmed by BCM sales team on <<Order Confirmation>>.



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