Model 101B(a16G)
Pressure Sensors

Description

The 101B(a16G) a pressure sensor developed for general purpose applications in which aggressive media and hostile environments compatible with 316L stainless steel occur.

The 101B(a16G) uses BCM's piezoresistive sensor die with or without temperature compensation. The sensor die is packaged in a stainless steel housing filled by oil. The pressure references of the sensor can be gauge (relative), absolute or sealed gauge.

To take a comparison with the 101B(a15G), the 101B(a16G) provides different ranges with the same pressure reference and features a slightly larger diaphragm and shorter body length.

Equipped with an O-ring, the 101B(a16G) is handy to be fitted into or taken off from its further instrumentation. Face welding can also be used on this model if solid fitting is required.

Features

- pressure references & ranges:
  gauge: -1, ..., 600 bar
  absolute: 10, ..., 16 bar
  sealed gauge: 10, ..., 250 bar
- accuracy up to 0.25%fs
- rugged, isolated stainless steel package
- either with or without temperature compensation
- outstanding sensitivity and reliability
- excited by either current or voltage

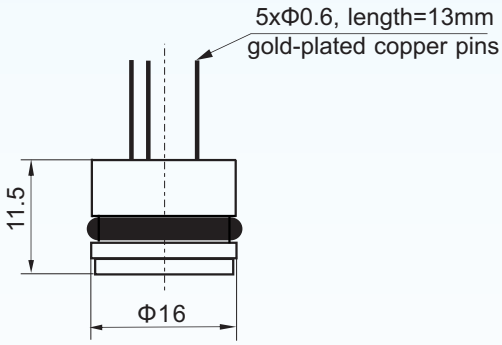
Applications

- industrial controls
- compressors
- refrigeration and HVAC systems
- pneumatic and hydraulic controls
- biomedical instrumentation

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



Note: All dimensions are in mm.

BCM SENSOR TECHNOLOGIES BVBA

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Technical Data

Parameter		Units	Specifications	Notes
pressure medium			compatible with pressure diaphragm	
pressure references & ranges	gauge	bar	-1~0, 0~1, ~1.6, ~2.5, ~4, ~6, ~10, ~16, ~25, ~40, ~60, ~100, ~160, ~250, ~400, ~600	1
	absolute	bar	0~2.5, ~4, ~6, ~10, ~16	
	sealed gauge	bar	0~10, ~16, ~25, ~40, ~60, ~100, ~160, ~250	
overload pressure		%fs	200 (375bar is the max. for sealed gauge)	2
full scale output (fso)		mV	⩾ 100	3 & 4
excitation	voltage	Vdc	5 (max. 10)	
	current	mA	1.5 (max. 2)	
zero offset		mV	⩽ ±2	4
accuracy		%fs	⩽ ±0.25 (standard), ⩽ ±0.5	5
long-term stability		%fs/year	⩽ ±0.2	
input resistance		kΩ	5 ±3	
output resistance		kΩ	4.5 ±1.5	
insulation resistance		MΩ	100 @250Vdc	
compensated temperature range		°C	-10 ~ +70	
operating temperature range		°C	-40 ~ +125	
storage temperature range		°C	-40 ~ +125	
temperature coefficient of zero offset		%fso/°C	⩽ ±0.02	6
temperature coefficient of span		%fso/°C	⩽ ±0.02	6
life time		cycles	10^8	
response time		ms	⩽ 1	7
process sealing			O-ring (fluorine rubber)	
electrical interface			4 colored flying wires, silicone rubber, 100mm (standard)	
			4 gold-plated copper pins, Φ0.45mm, 13mm	
			5 gold-plated copper pins, Φ0.45mm, 13mm	
pressure diaphragm			316L SS (standard), Hastelloy-C, Tantalum	
wetted parts material			316L SS (standard), Hastelloy-C	
filling oil			silicone oil	
net weight		gram	~23	

General conditions for measurements: media temp. = 25°C ±1°C, ambient temp. = 25°C ±1°C, humidity = 50%RH ±5%RH, barometric pressure: 86~106 kPa, 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 (non-linearity^2 + hysteresis^2 + repeatability^2).
6. Calculated as a rate of output change between -10°C and +70°C, and normalized by the output at 25°C, for the sensor which is temperature compensated.
7. 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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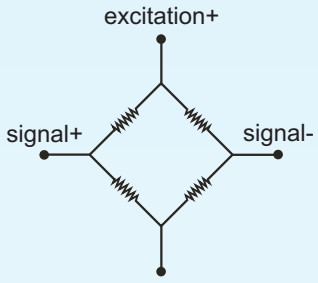
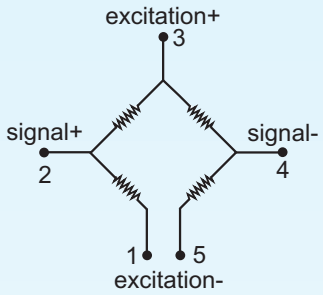
Circuit Diagram



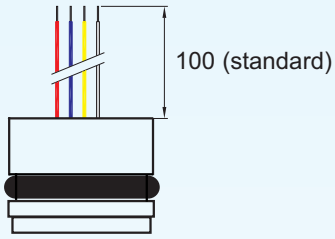
closed-bridge circuit diagram
for compensated sensors with 4 wires or 4 pins (standard)



open-bridge circuit diagram
for uncompensated sensors with 5 pins

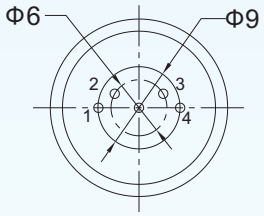
Electrical interface

4-colored flying wires (4F)



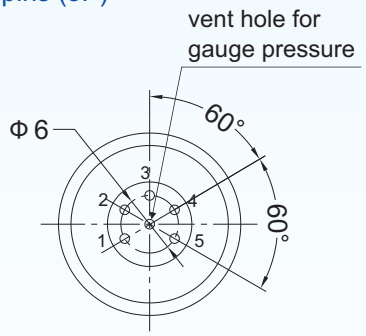
wire color	connection
yellow	signal +
red	excitation +
blue	excitation -
white	signal -

4 gold-plated copper pins (4P)



pin	connection
1	excitation -
2	signal -
3	excitation +
4	signal +

5 gold-plated copper pins (5P)



pin	connection
1	excitation -
2	signal -
3	excitation +
4	signal +
5	excitation -

Notes: - All dimensions are in mm.
- In case of alterations, refer to the label on the package.

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Ordering Information

ordering code: 101B(a16G)-40-G-II-T1-4F-v-(*)

pressure ranges			
(-1) = -1~0 bar	G	40 = 0~40 bar	G, S
1 = 0~1 bar	G	60 = 0~60 bar	G, S
1.6 = 0~1.6 bar	G	100 = 0~100 bar	G, S
2.5 = 0~2.5 bar	G, A	250 = 0~250 bar	G, S
4 = 0~4 bar	G, A	400 = 0~400 bar	G
6 = 0~6 bar	G, A	600 = 0~600 bar	G
10 = 0~10 bar	G, A, S	customized range available as an option	
16 = 0~16 bar	G, A, S		
25 = 0~25 bar	G, S		

pressure references
G = gauge pressure (standard)
A = absolute pressure
S = sealed gauge pressure

accuracy
0.25%fs (standard)
0.5%fs

compensation
T1 = -10 ~ +70 °C (standard)
NT = no temperature compensation

electrical interface
4F = 4 colored flying wires, silicone rubber, 100mm (standard)
4P = 4 gold-plated copper pins, Φ0.45mm, 13mm
5P = 5 gold-plated copper pins, Φ0.45mm, 13mm

excitation
v = 5Vdc (standard)
c = 1.5mA

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

Examples of Ordering Code

- standard sensor:

  model-pressure range-pressure reference-accuracy-compensation-electrical interface-excitation

  101B(a16G)-40-A-0.25%fs-T1-4F-v

- customized sensor:

  model-pressure range-pressure reference-accuracy-compensation-electrical interface-excitation-customized parameter

  101B(a16G)-25-G-0.25%fs-NT-5P-c-(*)

  (*): Customized electrical interface = 5 gold-plated copper pins;
  Customized diaphragm material = Hastelloy-C.

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