Model 101B(a15G)
General Purpose Pressure Sensors

Description

The 101B(a15G) pressure sensor applies to general purpose applications involving measurements of aggressive media in hostile environments compatible with 316L stainless steel.

The 101B(a15G) contains a sensing element made up of BCM's piezoresistive sensor die packaged in an oil-isolated housing with or without temperature compensation. The pressure references of the sensor can be gauge (relative), absolute and sealed gauge.

Compared with the 101B(a19G), the 101B(a15G) features a smaller size diaphragm so as to provide higher rated pressure.

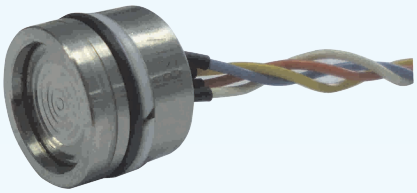
The 101B(a15G) can be fitted into further instrumentation by an O-ring, which enables the sensor to be handily mounted and demounted. For applications requiring solid fitting, face welding can be used on this model.

Features

- pressure references & ranges:
  gauge: 3.5, ..., 20 bar
  absolute: 3.5, ..., 20 bar
  sealed gauge: 35, ..., 600 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

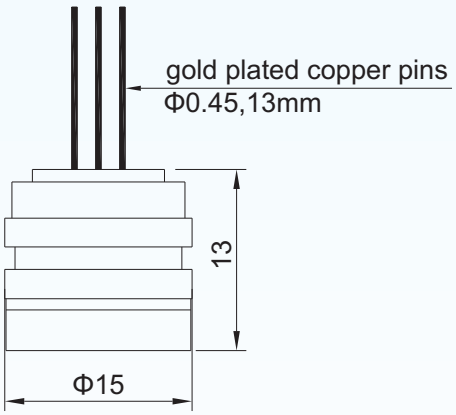
- industrial controls
- compressors
- refrigeration and HVAC systems
- pneumatic and hydraulic controls
- biomedical instrumentation



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

Industriepark Zone 4, Brechtsebaan 2
B-2900 Schoten - Antwerpen, BELGIUM

Tel.: +32-3-238 6469
Fax: +32-3-238 4171

website: www.bcmsensor.com
email: sales@bcmsensor.com

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Technical Data

Parameter		Units	Specifications	Notes
pressure medium			compatible with wetted parts material	
pressure references & ranges	gauge	bar	0~3.5, ~7, ~10, ~20	1
	absolute	bar	0~3.5, ~7, ~10, ~20	
	sealed gauge	bar	0~35, ~70, ~100, ~200, ~350, ~600	
overload pressure		%fs	200 (≤ 100bar), 150 (> 100bar)	2
full scale output (fso)		mV	≥ 100	3 & 4
excitation	voltage	Vdc	5 (max. 10)	
	current	mA	1 (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	4.5 ±1.5	
output resistance		kΩ	4.5 ±1.5	
insulation resistance		MΩ	100 @250Vdc	
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	≤ ±0.02	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, PVC, 100mm (standard)	
			4 gold-plated copper pins, Φ0.45mm, 13mm	
			5 gold-plated copper pins, Φ0.45mm, 13mm	
pressure diaphragm			316L SS	
wetted parts material			316L SS	
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 ±10%RH, barometric pressure: 86~106 kPa, vibration = 0.1 g (1m/s/s) max.

Notes:
1. For customized pressure ranges, consult BCM.
2. “fs” refers to full scale pressure or rated pressure.
3. Measured at full scale pressure.
4. Measured at 7.5Vdc excitation.
5. Accuracy = sqrt (non-linearity^2 + hysteresis^2 + repeatability^2).
6. 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.
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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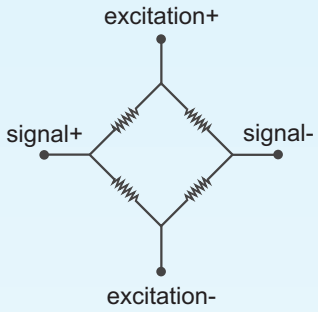
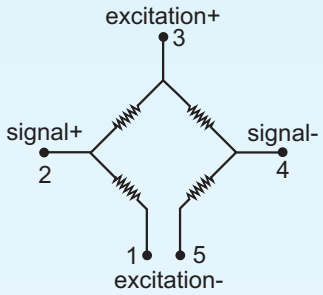
Circuit Diagram



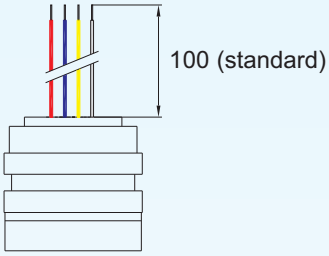
closed-bridge circuit diagram
for compensated sensors with 4 wires or 4 pins (standard)



open-bridge circuit diagram
for uncompensated sensors with 5 pins

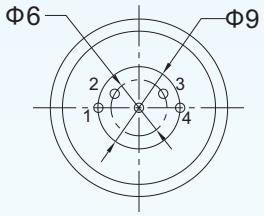
Electrical interface

4-colored flying wires (4F)



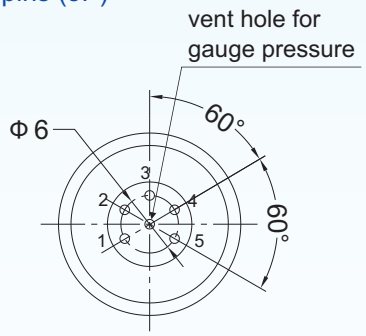
wire color	connection
yellow	signal +
red	excitation +
blue	excitation -
white	signal -

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(a15G)-100-S-II-T1-4F-v-(*)

pressure ranges			
3.5 = 0~3.5 bar	G, A	100 = 0~100 bar	S
7 = 0~7 bar	G, A	200 = 0~200 bar	S
10 = 0~10 bar	G, A	350 = 0~350 bar	S
20 = 0~20 bar	G, A	600 = 0~600 bar	S
35 = 0~35 bar	S	customized range available as an option	
70 = 0~70 bar	S		

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

accuracy
II = 0.25%fs (standard)
III = 0.5%fs

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

electrical interface
4F = 4 colored flying wires, PVC, 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 = 1mA

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(a15G)-20-G-II-T1-4F-v

- customized sensor:

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

  101B(a15G)-50-S-II-NT-5P-v-(*)

  (*): Customized pressure range = 0~50 bar.

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