Model 101A-a19G
Non-Compensated Pressure Sensors

101A-a19G non-compensated pressure sensors are manufactured from BCM piezoresistive silicon dies. The sensors are designed with CAD, the performance is simulated and the sensor prototype is fully tested before batch production. Serious quality control and dedicated calibration processes guarantee the specifications of these OEM pressure sensors in mass production and the higher production eligible rate.

101A-a19G pressure sensors possess a flush diaphragm facing the pressure media, able to measure pressures of viscous liquids, the diaphragm form a chamber, in which oil is filled to isolate the sensing element and transfer pressure. This isolation enables the sensor to measure the pressures of corrosive fluids as well as electro conductive liquids. The measuring pressure media should be in compatible with the material of the wetted parts.

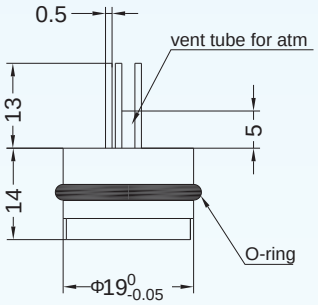
101A-a19G pressure sensors are designed for easy installation with O-rings (Viton) as sealing method. The sensors are made of stainless steel. Tantalum diaphragm and Hastelloy-C pressure port are available on request for corrosive media pressure application.

The sensors feature a wide measuring ranges of 0~0.2 bar to 0~400 bar, with an accuracy of 0.25%fs (fs = full scale output). Negative pressure measurement are available on requests for gauge pressure. In addition, the sensor can be excited by constant voltage or constant current to ease the application.

The sensor is temperature non-compensated, because of silicon resistors are very temperature dependent, so the maximum value of temperature coefficient of SPAN is high to 0.27 %fs/°C. It's very important to understand it with various specifications and their effects to accuracy.

All BCM pressure sensors are delivered with an individual certificate to aid their further application.

Dimensions:



Features:

- Measuring ranges: 0~0.2 bar to 0~400 bar
- Optional accuracy
- Gauge, absolute and sealed gauge
- Constant current or constant voltage excitation
- **Temperature non-compensated**
- **O-ring sealing method**
- Isolated construction, suitable for various fluid medium

Applications:

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

Physical properties:

Diaphragm: 316L SS; Tantalum (optional)
Pressure port: 316L SS; Hastelloy C (optional)
O-rings: Viton
Lead: Gold-plated Kovar
Fill Fluid: Silicon oil < 0.5CC
Laser trim board: Ceramic
weight: 16.5 g (range: ≤100 bar)
25 g (range: ≥200 bar)

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: 0.86 ~ 1.06 bar
Excitation Source: 1.5 ± 0.0015 mA dc

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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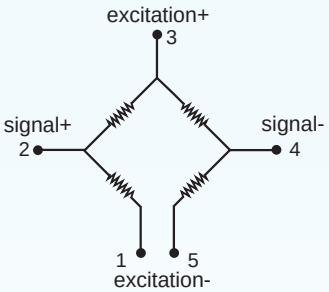
Technical data:

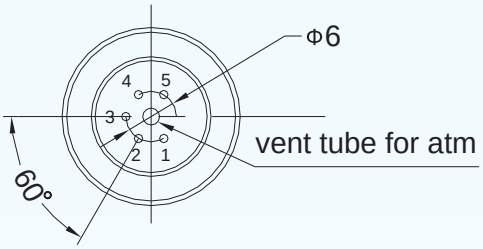
parameters	units	specifications
pressure medium		viscous fluid or fluid with grains, compatible with the wetted parts
pressure ranges & types*	bar, G	0~0.2, ~0.35, ~0.7, ~1, ~1.6, ~2.5, ~4, ~6, ~10, ~16, ~25
	bar, A	0~1, ~1.6, ~2.5, ~4, ~6, ~10, ~16, ~25
	bar, S	0~10, ~16, ~25, ~40, ~60, ~100, ~160, ~250, ~400
overload pressure	%fs	200 (for pressure ≤160 bar), 150 (for pressure ≥250 bar)
full scale output (@ 1.5 mA)	mVdc	≥30 (0~0.1bar), ≥60 (0~0.2,...,0~1bar), ≥100 (other ranges)
zero offset	mVdc	± 1, ± 2 (standard), ± 5
accuracy	%fs	± 0.25 (standard), 0.5
long-term stability	%fs/year	0.2 (standard), 0.3
life time	cycles	10^8
response time	ms	≤1 (10% ~ 90% of leading edge)
excitation	recommended, mA	1.5, ..., 2
	Vdc	5, ..., 10
input resistance	Ω	5000 ± 3000
output resistance	Ω	4500 ± 1000
insulation resistance	MO @ 500 V dc	500
compensated temperature range	°C	non-compensated
operating temperature range	°C	- 40 ~ +120
storage temperature range	°C	- 40 ~ +120
temperature coefficient of ZERO	%fs/°C	≤ ± 0.07
temperature coefficient of SPAN	%fs/°C	≤ ± 0.27
pressure interface		O-ring (Viton)
electrical interface		5P (5-gold plated kovar pins, F 0.5 mm, length = 13 mm) 5F (5-colored flying wires, silicone rubber insulated, 100 mm)
diaphragm material		316L SS (standard), Tantalum
pressure port material		316L SS (standard), Hastelloy C
filling oil		silicone oil
unit weight	gram	~ 16.5 (ranges <100 bar), ~25 (ranges ≥ 100 bar)

*: The negative pressure measurement is available on requests for gauge pressure.
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.

Wheatstone bridge circuit:



Electrical connections: 5-pins layout



5-pin electrical configuration

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

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Ordering codes system:

example: 101A-a19G - 25 - G - II - c - 5P - N - Cxxxx

model number
101A-a19G
101A-a19G (TH)*

pressure ranges & available pressure types	
020 = 0.2 bar G	16 = 16 bar G, A, S
035 = 0.35bar G	25 = 25 bar G, A, S
070 = 0.7 bar G	40 = 40 bar S
1 = 1 bar G, A	60 = 60 bar S
1.6 = 1.6 bar G, A	100 = 100 bar S
2.5 = 2.5 bar G, A	160 = 160 bar S
4 = 4 bar G, A	250 = 250 bar S
6 = 6 bar G, A	400 = 400 bar S
10 = 10 bar G, A, S	

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

accuracy	
II = 0.25%fs	III = 0.5%fs

excitation method
c = 1.5, ..., 2 mA excitation
v = 5, ..., 10 Vdc excitation

electrical connection
5P = 5-gold plated Kovar pins of 0.5 mm in diameter
5F = 5-colored flying wires (length = 100 mm)

measurement of negative pressure
Y = need for negative pressure
N = not need for negative pressure

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>>.

*: TH = Tantalum diaphragm and Hastelloy-C housing

Ordering code explanations: 101A-a19G - 25 - G - II - c - 5P - N - C0116

Model 101A-a19G non-compensated OEM pressure sensor for gauge (relative) pressure measurement in 0~25 bar range, the typical accuracy of pressure sensor is 0.25%fs, the excitation voltage is 1.5 mA, the electrical connection is 5 gold-platted kovar pins, no need for negative pressure measurement. The customer has indicated on January 16th his wished specification on his order sheet for the ordered 101A-a19G, and this customer-wished specifications has to be confirmed by BCM sales team on <<Order Confirmation>>.

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ISO9001 Certified Company

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