Model 101B-a19G
Compensated Pressure Sensors

101B-a19G 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 pressure sensors in mass production and the higher production eligible rate.

101B-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.

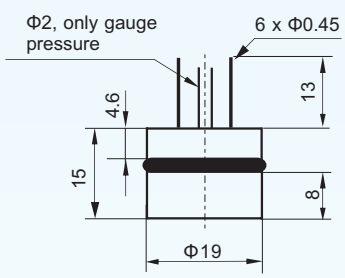
101B-a19G pressure sensors are designed for easy installation with O-rings (Viton) as sealing method. The sensors are made of stainless steel. Tantalum diaphragm and Hastelloy-C pressure port are available on request for corrosive media pressure application.

The sensors feature a wide measuring ranges of 0 ~ 0.1 bar to 0 ~ 350 bar, with an accuracy of 0.25 %fso (fso = 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.

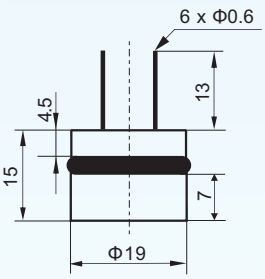
The sensors are compensated with laser trimmed technologies, two compensated temperature ranges are available: 0 ~ 70 °C and -20 ~ +70 °C. The operation temperature range is -40 ~ +125 °C.

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

Dimensions:



for ranges: ≤ 100 bar



for ranges: > 0~100 bar

Features:

Measuring ranges: 0 ~ 0.1 bar to 0 ~ 350 bar
Optional accuracy: up to 0.1 %fso
Gauge (G), absolute (A) and sealed gauge (S)
Constant current or constant voltage excitation
Temperature compensation by laser trimming
compensated temp. ranges: 0 ~ 70 °C, -20 ~ +70 °C
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 (standard), Tantalum
Pressure port: 316L SS (standard), Hastelloy C
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 10 gs' RMS, 20 ~ 2000 Hz
Shock: 100 g, 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

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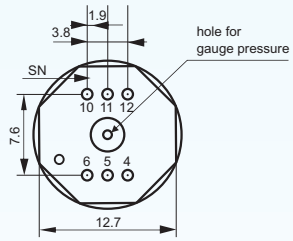
Technical data:

parameters	units	specifications
pressure medium		viscous fluid or fluid with grains, compatible with the wetted parts
pressure ranges & types*	bar, G	0~0.1, 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	0~1, 0~2, 0~3.5, 0~7, 0~10, 0~20, 0~35
	bar, S	0~70, 0~100, 0~200, 0~350
overload pressure	%FS	250 (for pressure < 35 bar), 150 (for pressure ≤ 35 bar)
full scale output (@ 1.5 mA)	mVdc	≥ 50 (for pressure ≤ 0.2bar), ≥ 100 (for pressure > 0.2bar)
zero offset	mVdc	≤ ± 3
accuracy	%FSO	± 0.1, ± 0.25 (standard), 0.5
long-term stability	%FSO/year	0.2
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	MΩ @ 500 V dc	500
compensated temperature range	°C	0 ~ 70 (standard), -20 ~ 70
operating temperature range	°C	- 40 ~ +125
storage temperature range	°C	- 40 ~ +125
temperature coefficient of ZERO	%FSO/°C	≤ ± 0.01 (for pressure > 0.7 bar), ≤ ± 0.015 (pressure ≤ 0.7 bar)
temperature coefficient of SPAN	%FSO/°C	≤ ± 0.01 (for pressure > 0.7 bar), ≤ ± 0.015 (pressure ≤ 0.7 bar)
pressure interface		O-ring (Viton)
electrical interface		6P (6 gold-plated kovar pins, Φ0.45 mm, length = 13 mm) 5P (6 gold-plated kovar pins, Φ0.45 mm, length = 13 mm) 4F (4 colored flying wires, PVC insulated, 100 mm)
diaphragm material		316L SS (standard), Tantalum
pressure port material		316L SS (standard), Hastelloy-C
filling oil		silicone oil
net weight	gram	~ 23

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

Electronic connections (#):

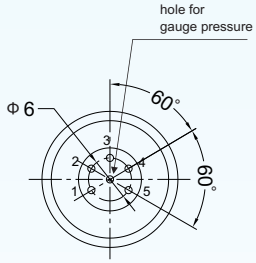
6 gold-plated kovar pins (6P)



pin	connection
4	signal +
5	excitation +
6	excitation -
10	signal -
11	N.C. (*)
12	N.C. (*)

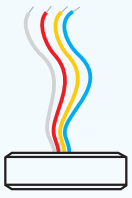
* N.C.: not connected

5 gold-plated kovar pins (5P)



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

4-colored flying wires (4F)



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

#: In case of alterations, refer to the label on the packaging.

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Model 101B-a19G
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Ordering codes system:

example: 101B-a19G - 35 - G - II - c - T1 - 6P - N - Cxxxx

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

pressure ranges & available pressure types	
010 = 0.1 bar G	10 = 10 bar G, A
020 = 0.2 bar G	20 = 20 bar G, A
035 = 0.35 bar G	35 = 35 bar G, A
070 = 0.7 bar G	70 = 70 bar S
1 = 1 bar G, A	100 = 100 bar S
2 = 2 bar G, A	200 = 200 bar S
3.5 = 3.5 bar G, A	250 = 250 bar S
7 = 7 bar G, A	350 = 350 bar S

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

accuracy	
I = 0.1%fso	II = 0.25%fso
III = 0.5%fso	

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

compensated temperature range
T1 = 0 ~ 70 °C (standard)
T2 = -20 ~ +70 °C

electrical connection
6P = 6 gold-plated Kovar pins, Φ0.45 mm, 13 mm
5P = 5 gold-plated Kovar pins, Φ0.45 mm, 13 mm
4F = 4 colored flying wires, PVC insulated, 100 mm

measurement of negative pressure
Y = need for negative pressure (-1 bar ~ 0)
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: 101B-a19G - 35 - G - II - c - T1 - 6P - N - C0116

Model 101B-a19G compensated OEM pressure sensor for gauge (relative) pressure measurement in 0~35 bar range, the typical accuracy of pressure sensor is 0.25 %fso, the excitation current is 1.5 mA, the compensated temperature range is 0~70 °C, the electrical connection is 6 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 101B-a19G, and this customer-wished specifications has to be confirmed by BCM sales team on <<Order Confirmation>>.

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