Model 101A-a19L
Non-Compensated Low Pressure Sensors

101A-a19L non-compensated low 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.

101A-a19L sensors possess a flush diaphragm facing the pressure media and short length in dimensions, 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.

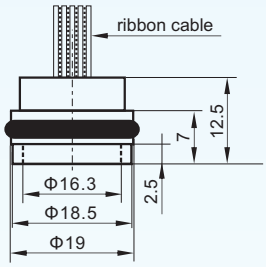
The sensors feature a wide measuring range for low pressure of 0~0.35 to 0~25 bar, with high accuracy up to 0.25 %fso (fso = full scale output), In addition, the sensors can be powered with either current or voltage to ease applications.

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 2.7 %fso/10°C, It's very important to understand it with various specifications and their effects to accuracy.

Model 101A-a19L sensors are designed for easy installation with O-rings as sealing method, the sensor has a diameter of 19 mm, the suffix L stands for low pressure.

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

Dimensions:



Applications:

- Process control systems
- Level systems
- Hydraulic systems and valves
- Biomedical instruments
- Aviation and spaceflight, petroleum and chemical

Reference specifications:

Media Temperature:	25 ± 1 °C
Ambient Temperature:	25 ± 1 °C
Vibration:	0.1 g (1 m/s/s) max
Humidity:	50% ± 10%
Ambient Pressure:	86 ~ 106 kPa
Excitation Source:	1.0 ± 0.0015 mAdc

Features:

- Measuring ranges: 0~0.35 bar to 0~25 bar
- Isolated construction, suitable for various fluid medium
- Wide suitability and easy operation, solid, reliability
- Short length in dimensions
- **Temperature non-compensated,**
- **O-ring sealing method**
- Optional accuracy
- Mass production, cost-effective
- Gauge, absolute pressure type
- Constant current or voltage excitation

Physical properties:

Diaphragm:	316L ; Tantalum (option)
Pressure port:	1Cr18Ni9Ti; Hastelloy-C (option)
O-rings:	Viton
Lead:	Gold-plated Kovar
Fill Fluid:	Silicon oil < 0.5 CC
Weight:	16 g

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

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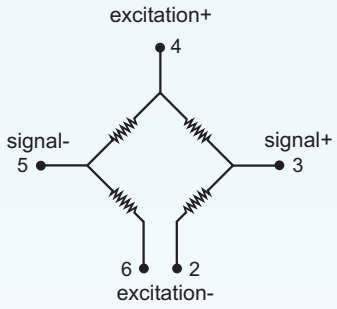
Specifications:

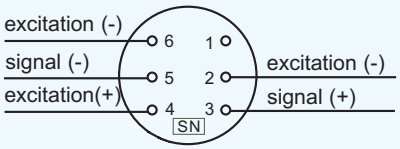
parameters	units	specifications
pressure medium		viscous fluid or fluid with grains, compatible to wetted parts
measuring ranges	bar	0~0.35, 0~0.6, 0~1, 0~2.5, 0~6, 0~10, 0~16, 0~25
pressure type		absolute (A), gauge(G)
overload pressure	%FS	200
excitation power supply		1± 50%mA or 5 ±10%Vdc
full scale output	mVdc	≥ 30 (ranges 0~0.35, 0~0.6); ≥ 50 (other ranges)
zero offset	mVdc	±1
combined error	%FSO	± 0.25 (standard), 0.5
long-term stability	%FSO/year	0.2 (standard), 0.3
life time	cycles	10^8
response time	ms	≥1 (10% ~ 90% of leading edge)
bridge resistance	KΩ	5 ± 20%
insulation resistance	MΩ	100 @ 100 V dc
operating temperature range	°C	-30 ~ +100
storage temperature range	°C	-30 ~ +100
temperature coefficient of ZERO	%FSO/10°C	± 0.7
temperature coefficient of SPAN	%FSO/10°C	± 2.7
pressure interface		O-ring
electrical interface		6P (6 gold-plated kovar pins, Φ0.45 mm); 5F (5 colored PVC flexible wires, 100 mm length)
diaphragm material		316L, Tantalum (optinal)
pressure port material		1Cr18Ni9Ti; Hastelloy C (optional)
net weight	gram	24

The listed specifications are subject to change without prior notice.

Wheatstone-bridge circuit:



Electronic connections:



6-pin or 5-wire electrical configuration

pin	connection	color
1	N.C. (*)	N.A. (**)
2	excitation -	black
3	signal +	orange
4	excitation +	red
5	signal -	yellow
6	excitation -	brown

* N.C.: not connected
** N.A.: not available

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Ordering codes system:

example: 101A-a19L - 10 - G - II - 6P - v - Cxxxx

model number
101A-a19L

pressure ranges & available pressure types	
035 = 0 ~ 35 kPa G, A	6 = 0 ~ 6 bar G, A
060 = 0 ~ 60 kPa G, A	10 = 0 ~ 10 bar G, A
1 = 0 ~ 1 bar G, A	16 = 0 ~ 16 bar G, A
2.5 = 0 ~ 2.5 bar G, A	25 = 0 ~ 25 bar G, A

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

combined error (L+H+R)
I = 0.25 %fso
II = 0.5 %fso

electrical connection
6P = 6 gold-plated Kovar pins of 0.45 mm in diameter
5F = 5 colored PVC flexible wires (length = 100 mm)

excitation	
c = 1 ± 50% mA	v = 5 ± 10% Vdc

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>>.

Ordering Code Explanations: 101A-a19L - 10 - G - II - 6P - v - C0116

Model 101A-a19L non-compensated low pressure OEM sensor for gauge (relative) pressure measurement in 0~10 bar range, the typical accuracy of pressure sensor is 0.5 %fso, electrical connection is 6 gold-platted kovar pins and the sensor is required to power supply with constant 5V voltage. The customer has indicated on January 16th his wished specifications on his order sheet for the ordered 101A-a19L, and this customer-wished specifications has to be confirmed by BCM sales team on <<Order Confirmation>>.

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