

# Model 101B(a19L) Compact Pressure Sensors



## Description

The 101B(a19L) pressure sensor is designed for low pressure applications involving measurements of aggressive media in hostile environments which are compatible with 316L stainless steel.

This model uses BCM's piezoresistive sensor die in an oil-isolated housing with or without temperature compensation. The pressure references of the sensor include gauge (relative) and absolute pressure.

About fitting method, both face welding and O-ring fitting can be used for the sensor. Plus a low profile, the 101B(a19L) is able to be integrated in various systems.



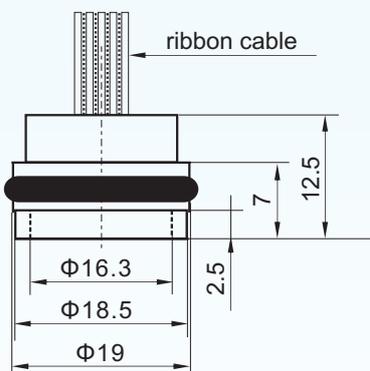
## Features

- measuring ranges: 0.2bar, ..., 25bar
- accuracy up to 0.25%fs
- either with or without temperature compensation
- compensated temperature range: -10~+70 °C
- outstanding reliability
- excited by either current or voltage

## Applications

- process control systems
- liquid level control
- pneumatic and hydraulic systems
- biomedical instruments
- heating, ventilation, and air conditioning controls
- petroleum and chemical industry
- ship and marine systems
- aviation

## Dimensions



Note: All dimensions are in mm.

## Environmental Conditions

- 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

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## Technical Data

Parameter		Units	Specifications	Notes
pressure medium			compatible with pressure diaphragm	
pressure ranges	gauge (standard)	bar	0~0.2, ~0.35, ~0.7, ~1, ~3.5, ~7, ~10, ~16, ~25	1
	absolute/sealed gauge	bar	0~0.35, ~0.7, ~1, ~3.5, ~7, ~10, ~16, ~25	1
proof pressure		%fs	200	2
burst pressure		%fs	300	
full scale output (FSO)		mV	≥ 50, (for range of 0.2bar, ≥ 28)	3,4,5
excitation	voltage	Vdc	5 (max. 10)	
	current	mA	1.5 (max. 2)	
zero offset		mV	≤ ±1	4
accuracy		%fs	≤ ±0.25 (standard), ≤ ±0.5	6
long-term stability		%fs/year	≤ ±0.2	
bridge resistance		kΩ	5 ±1	
insulation resistance		MΩ	50 @50Vdc	
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	7
temperature coefficient of span		%fso/°C	≤ ±0.02	7
life time		cycles	10 <sup>8</sup>	
response time		ms	≤ 1	8
process sealing			O-ring (fluorine rubber)	
electrical interface			4 colored flying wires, silicone rubber, 100mm (standard)	
			4 conductor flat-cable, 100mm	
			5 colored flying wires, silicone rubber, 100mm	
			6 gold-plated copper pins, Φ0.45mm, 13mm	
pressure diaphragm			316L SS	
wetted parts material			316L SS	
filling oil			silicone oil	
net weight		gram	~16	

General conditions for measurements: media temp. = 25°C ±1°C, ambient temp. = 25°C ±1°C, humidity = 50%RH ±5%RH,  
barometric pressure: 860~1060mbar, max. vibration = 0.1 g (i.e. 1m/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. Output options: 0.5~4.5Vdc ratiometric, 4~20mA, I<sup>2</sup>C

6. Accuracy = sqrt (non-linearity<sup>2</sup> + hysteresis<sup>2</sup> + repeatability<sup>2</sup>).

7. 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.

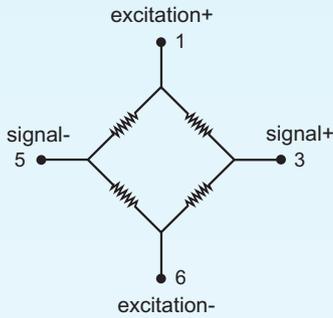
8. Response time for a 0 bar to fs step change, 10% to 90% rise time.

The listed specifications and dimensions are subject to change without prior notice.

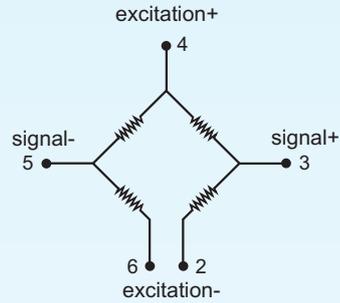
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## Circuit Diagram



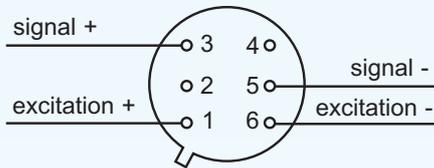
**closed-bridge circuit diagram**  
for compensated sensors with 4 wires or 6 pins  
(standard)



**open-bridge circuit diagram**  
for uncompensated sensors with 5 wires

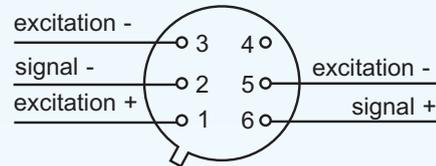
## Electronic Interface

4 colored flying wires or 6 copper pins



pin	connection	wire color
1	excitation +	red
2	no function	no wire
3	signal +	orange
4	no function	no wire
5	signal -	yellow
6	excitation -	brown

5 wires or 6 gold-plated copper pins



pin	connection	wire color
1	excitation +	red
2	signal -	yellow
3	signal +	orange
4	no function	no wire
5	excitation -	black
6	excitation -	brown

Notes: In case of alterations, refer to the label on the package.

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## Ordering Information

ordering code: 101B(a19L)-10-G-0.25%fs-T1-4F-v-(\*)

pressure ranges			
0.2 = 0~0.2 bar	G	10 = 0~10 bar	G, A
0.35 = 0~0.35 bar	G, A	16 = 0~16 bar	G, A
0.6 = 0~0.6 bar	G, A	25 = 0~25 bar	G, A
1 = 0~1 bar	G, A	customized range available as an option	
2.5 = 0~2.5 bar	G, A		
6 = 0~6 bar	G, A		
pressure types			
G = gauge pressure (standard)			
A = absolute 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, PVC, 100mm (standard)			
4C = 4 conductor flat-cable, 100mm			
5F = 5 colored flying wires, PVC, 100mm			
6P = 6 gold-plated copper pins, $\Phi$ 0.45mm, 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 type-accuracy-compensation-electrical interface-excitation  
**101B(a19L)-6-A-0.25%fs-T1-4F-v**
- customized sensor:  
model-pressure range-pressure type-accuracy-compensation-electrical interface-excitation-customized parameter  
**101B(a19L)-10-G-0.25%fs-NT-6P-c-(\*)**  
(\*): Customized electrical interface = 6 gold-plated copper pins..

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