Model 101B(a19D)
Low-Profile Differential Pressure Sensors

Description

The model 101B(a19D) is a low-profile compensated differential pressure sensor, based on the BCM piezoresistive silicon sensor die. The sensing element is packaged in a 316L SS (stainless steel) housing where silicone oil is filled. Through the filling oil, measured pressure can be transferred from the 316L SS diaphragm to the sensing element. The 101B(a19D) which can be sealed by an O-ring features wetted parts with a diameter of 19mm.

The 101B(a19D) is designed for differential pressure measurement from 0~0.1bar to 0~20bar with accuracy up to 0.5%fs (full scale). Owing to the flush diaphragm, the sensor is enabled to measure viscous fluids or fluids with particles, and it is also compatible with corrosive media.

Features

- differential ranges: 0.1bar, ..., 20bar
- accuracy up to 0.5%fs
- rugged, isolated stainless steel package
- excited by either current or voltage
- compact design

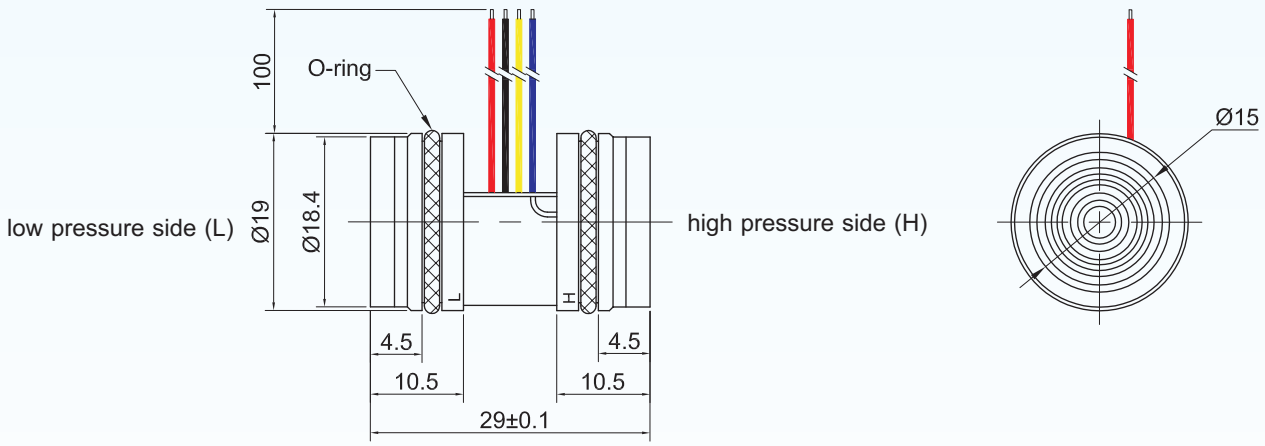
Applications

- process control systems
- smart valve applications
- industrial controls
- pneumatic and hydraulic controls
- pressure transducers and transmitters

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.

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Technical data:

Parameters		Units	Specifications	Notes
pressure medium			compatible with pressure diaphragm	
static pressure		%fs	1000 max., with limit of 100bar	1
differential pressure ranges		barD	0~0.1, ~0.2, ~0.35, ~0.7, ~1, ~2, ~4, ~6, ~10, ~20	2
proof pressure	high pressure side	%fs	200 (35bar max.)	
	low pressure side	%fs	150 (1.5bar max.)	
burst pressure	high pressure side	%fs	300 (50bar max.)	
	low pressure side	%fs	200 (1.8bar max.)	
full scale output signal		mV	⩾ 40 (range ⩽ 0.1), ⩾ 60 (ranges > 0.1)	3
excitation	voltage	Vdc	3, ..., 10, typically 5Vdc	
	current	mA	1, ..., 2, typically 1.5mA	
zero offset		mV	⩽ ±2	3
accuracy		%fs	±0.5 (standard), ±1	4
long-term stability		%fs/year	⩽ ±0.3	
input resistance		kΩ	5±3	
output resistance		kΩ	4.5±1.5	
insulation resistance		MΩ	⩾ 100 @250Vdc	
compensated temperature range		°C	0~50 (ranges ⩽ 2bar), -10~+70 (ranges > 2bar)	
operating temperature range		°C	-40 ~ +125	
storage temperature range		°C	-40 ~ +125	
temperature drift of zero offset		mV	⩽ ±0.75 (ranges > 2bar), ⩽ ±0.8 (0.35bar ⩽ ranges ⩽ 2bar), ⩽ ±1.2 (ranges < 0.35bar)	3 & 5
temperature drift of span		mV	⩽ ±0.75 (ranges > 2bar), ⩽ ±0.8 (0.35bar ⩽ ranges ⩽ 2bar), ⩽ ±1.2 (ranges < 0.35bar)	3 & 5
life time		cycles	10^8	
response time		ms	⩽ 1	6
process sealing			O-ring, welding	
electrical interface			4 colored flying wires, silicone rubber, 100mm length	
diaphragm material			316L SS	
housing material			316L SS	
filling oil			silicone oil	
net weight		gram	~46	

General conditions for measurements: media temp. = 25°C ±1°C, ambient temp. = 25°C ±1°C.

Notes:
1. “fs” means full scale and refers the maximum working pressure or rated pressure.
2. For customized pressure ranges, consult BCM.
3. Measured at 5Vdc.
4. Accuracy = sqrt(non-linearity^2 + hysteresis^2 + repeatability^2).
5. Calculated as the maximum change of output over the compensated temperature range.
6. Response time for a 0 bar to fs step change, 10% to 90% rise time of leading edge.

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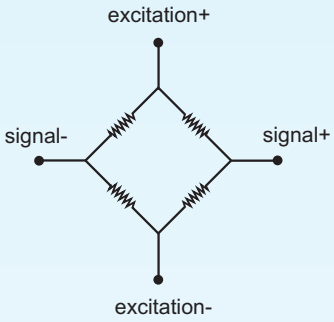
Wheatstone Bridge Circuit



Electrical Interface

(4-colored flexible wires)

connection	color
excitaiton +	red
excitation -	black
signal +	yellow
signal -	blue

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Ordering Information

position (pos.) 1: model	pos. 2: static pressure	pos. 3: pressure ranges and references	pos. 4: output signal	pos. 5: accuracy	pos. 6: electrical interface	pos. 7: excitation	pos. 8: customized specifications
101B(a19D)	1000%fs (ranges ⩽10bar) 100bar (ranges > 10bar)	0.1barD, 0.2barD, 0.35barD, 0.7barD, 1barD, 2barD, 4barD, 6barD, 10barD, 20barD D: differential pressure	40mV (range = 0.1barD) 60mV (ranges > 0.1barD)	0.5%fs (standard) 1%fs	FW: 4-color flying wires, wire length = 100mm(#). #: The wire length can be customized on request, e.g., FW(200mm).	v = constant voltage excitation (standard) c = constant current excitation	"(*)" is necessary only if any customized parameter is required, otherwise it is neglectable.
pos.1	pos. 2	pos. 3	pos. 4	pos. 5	pos. 6	pos. 7	pos. 8

Examples of Ordering Code

- standard sensor:

  101B(a19D)-1000%fs-1barD-60mV-0.5%fs-FW-v

- customized sensor:

  101B(a19D)-40bar-2barD-30mV-1%fs-FW(150mm)-c-(*)

  . (*): Customized static pressure = 40bar for differential pressure 2bar.

The specifications, dimensions, and ordering information listed above are subject to change without prior notice.

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