Model 101B(f)
Flange-Mounting Pressure Sensors

Description

The 101B(f) pressure sensor consists of a customized flange and the BCM standard OEM pressure sensor 101B(a19L) or 101B(a19G). To choose whether the 101B(a19L) or 101B(a19G) depends on required ranges or constraint of size. The chosen standard sensor is fixed into the customized flange fitting made from either 316L or 17-4PH stainless steel via surface welding technique.

When the sensor is mounted or installed, it is sealed through a so-called surface-to-surface seal between a part of its front surface and the interface of the equipment to which it is installed or mounted. Therefore the high surface quality is required to guarantee the surface-to-surface seal often used in semiconductor industry.

An O-ring can be installed in between the front surface of the sensor and the equipment, to provide a low-cost solution for seal.

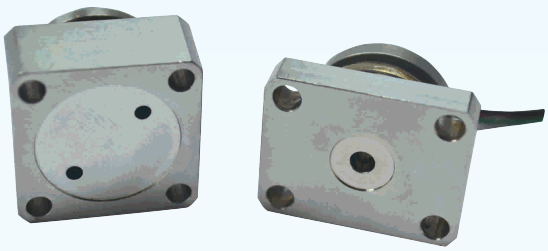
The sensor performance of the 101B(f) can be referred to the specifications of 101B(a19L) and 101B(a19G). In the datasheets the most common flange fittings are depicted in the drawings of sensor 101B(f).

Features

- measuring ranges: -1bar, 0.2bar, ..., 25bar
- accuracy up to 0.25%fs
- either with or without temperature compensation
- compensated temperature range: 0~70 °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



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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Model 101B(f)
Flange-Mounting Pressure Sensors

Technical Data - Model 101B(f) Based on Model 101B(a19G)

Parameter		Units	Specifications	Notes
pressure medium			gases or dilute fluids	1
pressure types & ranges	gauge	bar	-1~0, 0~0.1, ~0.35, ~0.7, ~1, ~2, ~3.5, ~7, ~10, ~20, ~35	2
	absolute	bar	0~1, ~2, ~3.5, ~7, ~10, ~20, ~35	
	sealed gauge	bar	0~70, ~100, ~200, ~350, ~600	
overload pressure		%FS	250 (< 35bar), 150 (≥ 35bar)	3
full scale output (fso)		mV	≥ 60, option: 0.5~4.5 Vdc ratiometric, 4~20mA, I2C	4 & 5
excitation	voltage	Vdc	5 (max. 10)	
	current	mA	1 (max. 2)	
zero offset		mV	≤ ±3	5
accuracy		%FS	≤ ±0.25 (standard), ≤ ±0.5	6
long-term stability		%FS/year	≤ ±0.2	
bridge resistance		kΩ	4~6	
insulation resistance		MΩ	50 @50Vdc	
compensated temperature range		°C	0~70 (standard)	
operating temperature range		°C	-40 ~ +125	
storage temperature range		°C	-40 ~ +125	
temperature coefficient of zero offset		%FSO/°C	≤ ±0.01 (> 0.7bar), ≤ ±0.015 (≤ 0.7bar)	
temperature coefficient of span		%FSO/°C	≤ ±0.01 (> 0.7bar), ≤ ±0.015 (≤ 0.7bar)	7
life time		cycles	10^8	7
response time		ms	≤ 1	
process sealing			O-ring (fluorine rubber)	8
electrical interface			4 colored flying wires, PVC, 100mm (standard)	
			5 gold-plated copper pins, Φ0.45mm, 13mm	
			6 gold-plated copper pins, Φ0.45mm, 13mm	
			flat cable (for conditioned signal output)	
pressure diaphragm			316L SS (standard)	
wetted parts material			316L SS (standard)	
filling oil			silicone oil	
net weight		gram	~30 (≤ 100bar), ~40 (≥ 200bar)	

General conditions for measurements: media temp. = 25°C ±1°C, ambient temp. = 25°C ±1°C, humidity = 50%RH ±10%RH, barometric pressure: 86~106 kPa, vibration = 0.1 g (1m/s/s) max.

Notes:
1. The pressure medium should be compatible with wetted parts material and pressure diaphragm.
2. For customized pressure ranges, consult BCM.
3. “fs” refers to full scale pressure or rated pressure.
4. Measured at full scale pressure.
5. Measured at 7.5Vdc excitation.
6. Accuracy = sqrt (non-linearity^2 + hysteresis^2 + repeatability^2).
7. Calculated as a rate of output change between 25°C and 70°C, and normalized by the output at 25°C, when the sensor is not 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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Model 101B(f)
Flange-Mounting Pressure Sensors

Technical Data - Model 101B(f) Based on Model 101B(a19L)

Parameter		Units	Specifications	Notes
pressure medium			gases or dilute fluids	1
pressure ranges	gauge (standard)	bar	-1~0, 0~0.2, ~0.35, ~0.7, ~1, ~3.5, ~7, ~10, ~16, ~25	2
	absolute/sealed gauge	bar	0~0.35, ~0.7, ~1, ~3.5, ~7, ~10, ~16, ~25	2
overload pressure		%fs	200	3
full scale output (fso)		mV	⩾ 50, option: 0.5~4.5 Vdc ratiometric, 4~20mA, I2C	4 & 5
excitation	voltage	Vdc	5 (max. 10)	
	current	mA	1 (max. 2)	
zero offset		mV	⩽ ±1	5
accuracy		%fs	⩽ ±0.25 (standard), ⩽ ±0.5	6
long-term stability		%fs/year	⩽ ±0.2	
bridge resistance		kΩ	4~6	
insulation resistance		MΩ	50 @50Vdc	
compensated temperature range		°C	0~70	
operating temperature range		°C	-40 ~ +125	
storage temperature range		°C	-40 ~ +125	
temperature coefficient of zero offset		%fso/°C	⩽ ±0.015	7
temperature coefficient of span		%fso/°C	⩽ ±0.015	7
life time		cycles	10^8	
response time		ms	⩽ 1	8
process sealing			face to face seal, O-ring (fluorine rubber)	
electrical interface			4 colored flying wires, PVC, 100mm (standard)	
			5 gold-plated copper pins, Φ0.45mm, 13mm	
			6 gold-plated copper pins, Φ0.45mm, 13mm	
			flat cable (for conditioned signal output)	
pressure diaphragm			316L SS	
wetted parts material			316L SS	
filling oil			silicone oil	
net weight		gram	~30	

General conditions for measurements: media temp. = 25°C ±1°C, ambient temp. = 25°C ±1°C, humidity = 50%RH ±10%RH, barometric pressure: 86~106 kPa, vibration = 0.1 g (1m/s/s) max.

Notes:
1. The pressure medium should be compatible with wetted parts material and pressure diaphragm.
2. For customized pressure ranges, consult BCM.
3. “fs” refers to full scale pressure or rated pressure.
4. Measured at full scale pressure.
5. Measured at 7.5Vdc excitation.
6. Accuracy = sqrt (non-linearity^2 + hysteresis^2 + repeatability^2).
7. Calculated as a rate of output change between 25°C and 70°C, and normalized by the output at 25°C, when the sensor is not 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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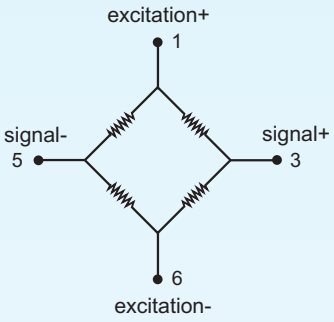
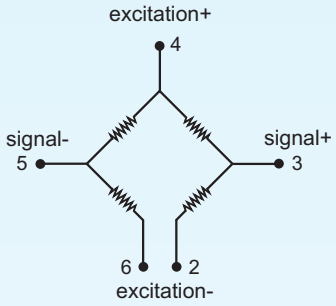
Circuit Diagram



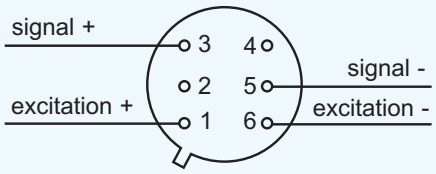
closed-bridge circuit diagram
for compensated sensors with 4 wires or 6 pins
(standard)



open-bridge circuit diagram
for uncompensated sensors with 5 pins

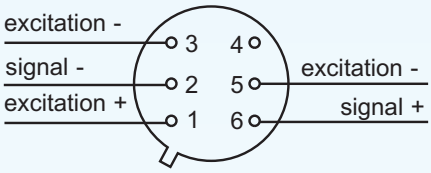
Electronic Interface

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

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Model 101B(f)
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Ordering Information - Model 101B(f) Based on Model 101B(a19G)

ordering code: 101B(f)-101B(a19G)-35-G-II-T1-4F-v-(*)

submodel
101B(a19G)

pressure ranges			
(-1) = -1~0 bar	G	35 = 0~35 bar	G, A
0.1 = 0~0.1 bar	G	70 = 0~70 bar	S
0.35 = 0~0.35 bar	G	100 = 0~100 bar	S
0.7 = 0~0.7 bar	G	200 = 0~200 bar	S
1 = 0~1 bar	G, A	250 = 0~250 bar	S
2 = 0~2 bar	G, A	350 = 0~350 bar	S
3.5 = 0~3.5 bar	G, A	600 = 0~600 bar	S
7 = 0~7 bar	G, A	customized range available as an option	
10 = 0~10 bar	G, A		
20 = 0~20 bar	G, A		

pressure types
G = gauge pressure (standard)
A = absolute pressure
S = sealed gauge pressure

accuracy
II = 0.25%FS (standard)
III = 0.5%FS

compensation
T1 = 0 ~ 70 °C (standard)
NT = no temperature compensation

electrical interface
4F = 4 colored flying wires, PVC, 100mm (standard)
5P = 5 gold-plated copper pins, Φ0.45mm, 13mm
6P = 6 gold-plated copper pins, Φ0.45mm, 13mm
FC = flat cable, 13mm,

excitation
v = 5Vdc (standard)
c = 1mA

customized parameter
"(*)" is necessary only if any customized parameter is required, otherwise it is neglectable.

Examples of Ordering Code

- standard sensor:

  model-submodel-pressure range-pressure type-accuracy-compensation-electrical interface-excitation

  101B(f)-101B(a19G)-35-A-II-T1-4F-v

- customized sensor:

  model-submodel-pressure range-pressure type-accuracy-compensation-electrical interface-excitation -customized parameter

  101B(f)-101B(a19G)-9-G-II-NT-5P-c-(*)

  (*): Customized pressure range = 0~9 bar.

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Model 101B(f)
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Ordering Information - Model 101B(f) Based on Model 101B(a19L)

ordering code: 101B(f)-101B(a19L)-10-G-II-T1-4F-v-(*)

submodel
101B(a19L)

pressure ranges			
-1 = -1~0 bar	G	6 = 0~6 bar	G, A
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		

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

accuracy
II = 0.25%FS (standard)
III = 0.5%FS

compensation
T1 = 0~70 °C (standard)
NT = no temperature compensation

electrical interface
4F = 4 colored flying wires, PVC, 100mm (standard)
5F = 5 colored flying wires, PVC, 100mm
6P = 6 gold-plated copper pins, Φ0.45mm, 13mm
FC = flat cable, 13mm,

excitation
v = 5Vdc (standard)
c = 1mA

customized parameter
"(*)" is necessary only if any customized parameter is required, otherwise it is neglectable.

Examples of Ordering Code

- standard sensor:

  model-submodel-pressure range-pressure type-accuracy-compensation-electrical interface-excitation

  101B(f)-101B(a19L)-6-A-II-T1-4F-v

- customized sensor:

  model-submodel-pressure range-pressure type-accuracy-compensation-electrical interface-excitation -customized parameter

  101B(f)-101B(a19L)-8-G-II-NT-6P-c-(*)

  (*): Customized pressure range = 0~8 bar.

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