

Model 101B(c) Customized Housing Pressure Sensors



Description

The 101B(c) pressure sensor is designed for general purpose applications involving measurements of dilute pressure media.

This model consists of BCM 101B(a19G) sensor, which is a oil-filled pressure sensor employing BCM piezoresistive semiconductor sensor die, and a stainless steel sensor housing.

The 101B(c) can be fitted into instruments by threads and sealed by an O-ring. The 101B(c) can work in hostile environment and with aggressive media which are compatible with 316L stainless steel.

It is possible to have the sensor with or without temperature compensation and select its pressure reference among gauge (relative), absolute and sealed gauge.

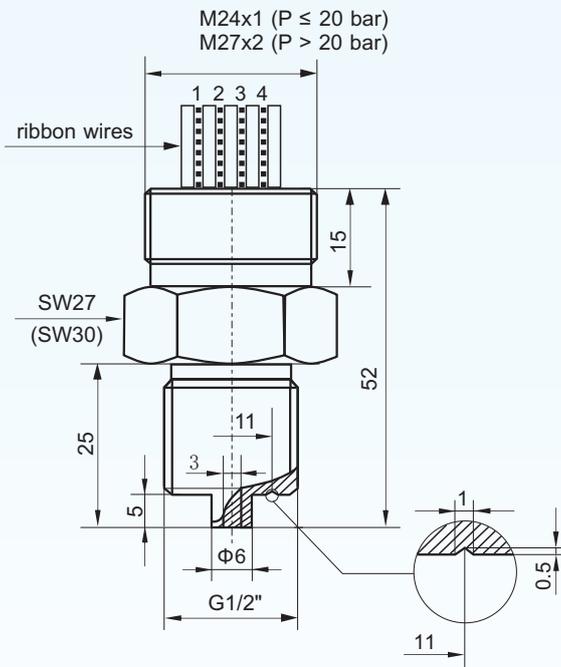
Features

- pressure types & ranges:
 - gauge: -1, ..., 35 bar
 - absolute: 1, ..., 35 bar
 - sealed gauge: 70, ..., 600 bar
- accuracy up to 0.25%fs
- rugged, isolated stainless steel package
- either with or without temperature compensation
- outstanding sensitivity and reliability
- excited by either current or voltage

Applications

- process control systems
- industrial controls
- pneumatic and hydraulic controls
- pressure transducers and transmitters
- pressure calibrators

Dimensions



Note: all dimensions are in mm

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



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Technical Data

| Parameter | | Units | Specifications | Notes |
|--|--------------|----------|---|-------|
| pressure medium | | | viscous fluid or fluid with particles | 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, ≤ ±0.5 (standard) | 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) | 7 |
| temperature coefficient of span | | %fso/°C | ≤ ±0.01 (> 0.7bar), ≤ ±0.015 (≤ 0.7bar) | 7 |
| life time | | cycles | 10 ⁸ | |
| response time | | ms | ≤ 1 | 8 |
| process connection | | | G1/2 male, M20x1.5 male (other threads on request) | |
| connection for housing | | | M24x1 (other threads on request) | |
| electrical interface | | | 4 colored flying wires, PVC, 100mm (standard) | |
| | | | 4 conductor flat-cable, 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 | ~110 | |

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.

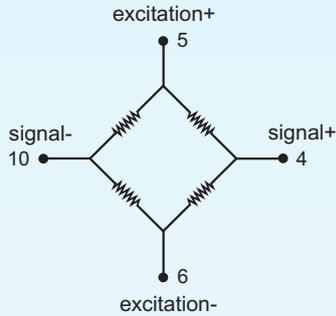
- Notes:
1. The pressure medium should be compatible with wetted parts material and pressure diaphragm.
 2. For customized pressure ranges, consult BCM.
 3. "fs" refers to full scale pressure or rated pressure.
 4. Measured at full scale pressure.
 5. Measured at 7.5Vdc excitation.
 6. Accuracy = $\sqrt{\text{non-linearity}^2 + \text{hysteresis}^2 + \text{repeatability}^2}$.
 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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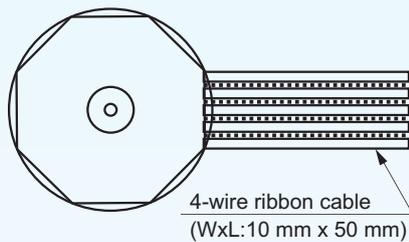
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Wheatstone Bridge Circuit



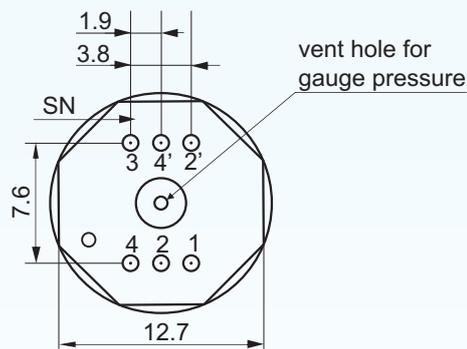
Electrical Interface

4-colored flying wires (4F)



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

6 gold-plated copper pins (6P)



| pin | connection |
|-----|--------------|
| 1 | signal + |
| 2 | excitation + |
| 3 | signal - |
| 4 | excitation - |
| 2' | no function |
| 4' | no function |

Notes: - All dimensions are in mm.

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

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Ordering Information

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

| 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 |
| III = 0.5%fs (standard) |

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

| electrical interface |
|---|
| 4F = 4 colored flying wires, PVC, 100mm (standard) |
| 4C = 4 conductor flat-cable, 100mm |
| 6P = 6 gold-plated copper pins, Φ 0.45mm, 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-pressure range-pressure type-accuracy-compensation-electrical interface-excitation
101B(c)-35-A-III-T1-4F-v
- customized sensor:
model-pressure range-pressure type-accuracy-compensation-electrical interface-excitation-customized parameter
101B(c)-9-G-II-NT-5P-c-(*)
(*): Customized pressure range = 0~9 bar.

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