

Model 101B-a13H Low Profile Compensated High Pressure Sensors



101B-a13H compensated high 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.

101B-a13H pressure sensors possess a flush diaphragm which allows these sensors to be able to measure pressure of viscous liquids. The chamber between the diaphragm and the sensing element is filled with oil, which isolates the sensing element and transfers pressure. This isolation enables the sensor to measure the pressure of corrosive fluids as well as electroconductive liquids.

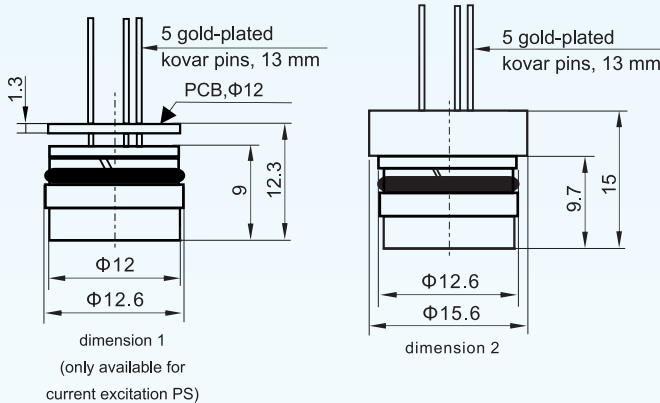
The sensors feature a wide measuring range for high pressure of 0~10 bar to 0~1000 bar, with accuracy of 0.25%fs (fs = full scale). In addition, the sensors can be powered with either current or voltage to suit different applications. The sensors are compensated with stick resistors compensation circuit. Although the compensated temperature range is -10~ +70 °C, the sensor can be used in a temperature range of -40 to +125 °C.

Model 101B-a13H sensors are designed for easy installation with O-rings as sealing method, the sensor has a diameter of 13 mm, the suffix H stands for high pressure.

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



Dimensions:



Features:

- low profile
- Measuring ranges: 0~10 bar to 0~1000 bar
- Isolated construction, suitable for various fluid medium
- Wide suitability and easy operation, solid, reliability
- Temperature compensation by laser trimming
- Compensated temperature range: -10 ~ +70 °C
- O-ring sealing method
- Mass production, cost-effective
- Gauge, absolute and sealed gauge pressure type
- Constant current or voltage excitation

Applications:

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

Physical properties:

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

Reference specifications:

- Media Temperature: 25 ± 1 °C
- Ambient Temperature: 25 ± 1 °C
- Vibration: 0.1 g (1m/s/s) max
- Humidity: 50% ± 10%
- Ambient Pressure: 0.86 ~ 1.06 bar
- Excitation Source: 1.0 ± 0.0015 mAdc

Environmental conditions:

- Position Effect: <0.1% of Zero shift for 90° tilt in any direction
- Vibration Effect: No change at 10gs' RMS, 20 ~ 2000 Hz
- Shock: 100g, for 10 millisecond
- Life: 100 million cycles

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Technical Data:

| parameters | units | specifications |
|---------------------------------|-------------------------|---|
| pressure medium | | viscous fluid or fluid with grains, compatible to wetted parts |
| measuring ranges and types | barS | 0~10, 0~25, 0~40, 0~60, 0~100, 0~250, 0~400, 0~600, 0~1000 |
| | barA | 0~10, 0~25, 0~40 |
| overload pressure | %fs | 200 (≤ 100 bar), 150 (other ranges) |
| full scale output | mVdc | ≥ 100 |
| excitation methods | | 1.5 mA (recommended) or 10 Vdc |
| zero offset | mVdc | ± 2 |
| accuracy | %fs | ± 0.25 (standard), ± 0.5 |
| long-term stability | %fs/year | $\leq \pm 0.2$ |
| life time | cycles | 10^8 |
| response time | ms | ≤ 0.5 (10% ~ 90% of leading edge) |
| bridge resistance | K Ω | 4.5 ± 1.5 |
| insulation resistance | M Ω | 100 @ 250 Vdc |
| compensated temperature range | $^{\circ}\text{C}$ | -10 ~ +70 |
| operating temperature range | $^{\circ}\text{C}$ | -40 ~ +125 |
| storage temperature range | $^{\circ}\text{C}$ | -40 ~ +125 |
| temperature coefficient of ZERO | %fs/ $^{\circ}\text{C}$ | ± 0.02 |
| temperature coefficient of SPAN | %fs/ $^{\circ}\text{C}$ | ± 0.02 |
| pressure interface | | O-ring |
| electrical interface* | | 4F (4-colored flying silicone rubber wires, 100 mm length) (standard) |
| | | 5P (5 gold-plated kovar pins, $\Phi 0.45$) |
| diaphragm material | | 316L SS (standard), Tantalum |
| pressure port material | | 316L SS (standard), Hastelloy C |

The listed specifications are subject to change without prior notice.

Reference of test conditions: excitation = 1.5 mA, temperature = 25 $^{\circ}\text{C}$, humidity = 60%RH.

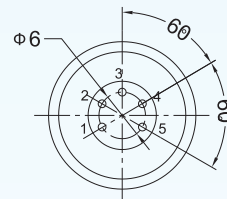
Electronic connections (#):

4-colored flying wires (4F)



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

5 gold-plated kovar pins (5P)



| pin | connection |
|-----|--------------|
| 1 | excitation - |
| 2 | signal - |
| 3 | excitation + |
| 4 | signal + |
| 5 | excitation - |

#: In case of alterations, refer to the label on the packaging.

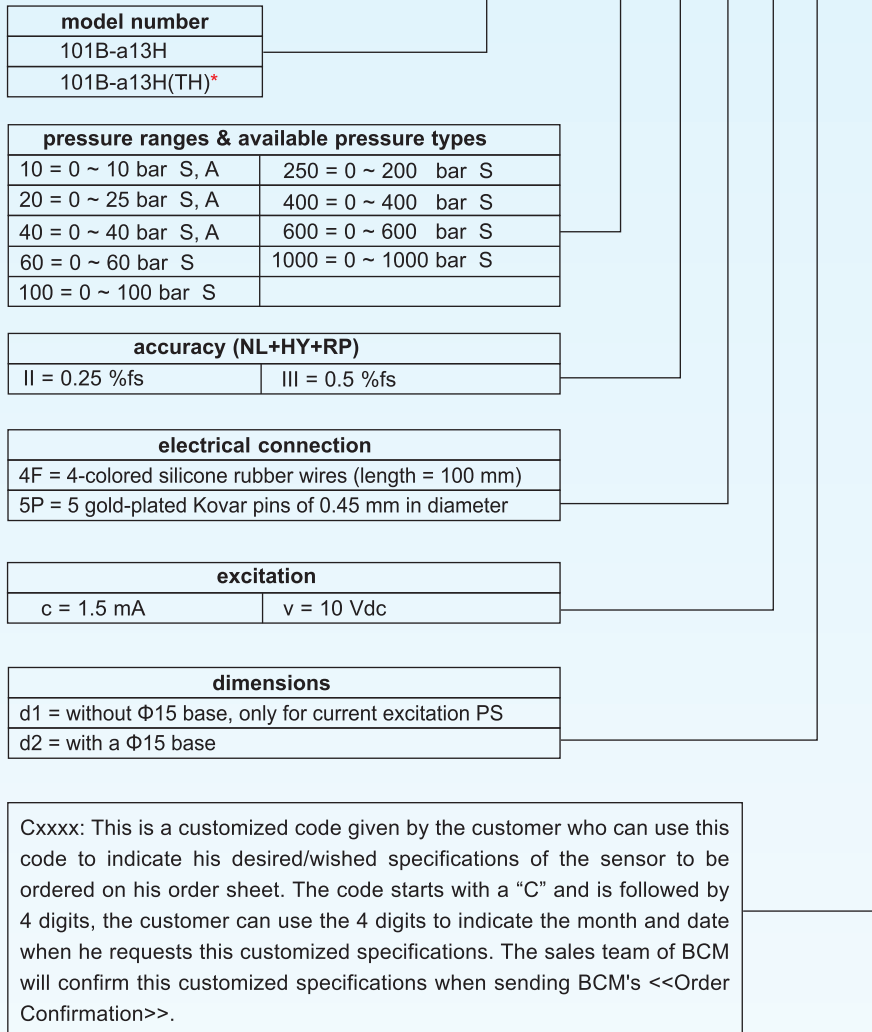
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Ordering Code System:

example: 101B-a13H - 350 - S - II - 4F - c - d2 - Cxxxx



Note: *: TH = Ta-diaphragm and Hastelloy C housing

Ordering Code Explanations: 101B-a13H - 350 - S - II - 5P - c - d2 - C0116

Model 101B-a13H compensated high pressure OEM sensor measurement in 0~350 bar range, the typical accuracy of pressure sensor is 0.25%fs, electrical connection is 5 gold-plated kovar pins and the sensor is excited by using a constant current of 1.5 mA. The sensor has a $\Phi 15$ mm base. The customer has indicated on January 16th his wished specifications on his order sheet for the ordered 101B-a13H, and this customer-wished specifications has to be confirmed by BCM sales team on <<Order Confirmation>>.



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