

PC11-BH Pressure Sensor

Features

- Focusing on customization
- High reliability pressure chip
- Fully-welded and small-sized structure
- High performance, high reliability
- Wide temperature compensation
- Gauge pressure, absolute pressure, sealed gauge pressure
- With constant current and constant voltage excitation options
- 18 months warranty period

Applications

- Supporting pressure transmitter manufacturers
- Fire protection and medical oxygen pressure matching

Industry

- Pressure control equipment
- Hydraulic equipment
- Liquid level control

Notes:

- 1 Do not touch the diaphragm with hard objects, which may cause damage to the diaphragm.
- 2 Please read the Instruction Manual of the product carefully before installation and check the relevant information of the product.
- 3 Strictly follow the wiring method for wiring; otherwise, it may cause product damage or other potential faults.
- 4 Misuse of the product may cause danger or personal injury.



PC11-BH1



PC11-BH2



PC11-BH3



PC11-BH4

Product overview

The PC11-BH pressure sensor includes 4 models. Its design concept is to sink the base into the pressure port and weld it with high-strength TIG welding through a reserved step at the rear end, which solves the problem of small installation size in on-site working conditions. It has high reliability, a small longitudinal size, and a large transverse size, making it the best choice for making highly reliable and high-grade pressure transmitters.

In order to provide a clearer description of the products in the series, the information clearly defines which designs cannot be changed and which personalized designs are made by customers based on their actual needs. By integrating the advantages of Wotian with the needs of your company, a perfect product is formed.

This model of product is mainly customized by customers. Except for the dimensions marked with * that is not recommended to change, other requirements can be customized according to customer needs.

Notes:

- 1 Do not misuse documentation.
- 2 The information presented in this product sheet is for reference only. Do not use this document as a product installation guide.
- 3 Complete installation, operation, and maintenance information is provided in the instructions of the product.
- 4 Misuse of the product may cause danger or personal injury.

Electrical performance parameters

Range and pressure reference	PC11-BH1 model: 0~10kPa...25MPa (gauge pressure, absolute pressure, sealed pressure) PC11-BH2 model: 0~10kPa...6MPa (gauge pressure, absolute pressure, sealed pressure) PC11-BH3 model: 0~20kPa...10MPa (gauge pressure, absolute pressure, sealed pressure) PC11-BH4 model: 0~100kPa...25MPa (gauge pressure, absolute pressure, sealed pressure)
Excitation	The recommended constant current compensation is 1.5mA; 10V recommended for constant voltage compensation; Both constant current and constant voltage excitation without compensation are acceptable.
Input impedance	Constant current: 2kΩ~5kΩ; Constant voltage: 3kΩ~18kΩ.
Electrical connections	Gold-plated Kovar pins or silicone soft wires
Compensation temperature	0°C~60°C (range<70kPa); -10°C~70°C (other ranges).
Operation temperature	-40°C~120°C
Storage temperature	-40°C~120°C
Insulation resistance	≥200MΩ/250VDC
Response time	≤1ms (rising to 90%FS)
Measurement medium	All liquids and gases compatible with 316L.
Mechanical vibration	20g (20~5000HZ)
Shock	100g (10ms)
Durability	1×10 ⁶ (cycles)

Structural performance parameters

Diaphragm material	316L
Material of the pressure port	SS304 or SS316L
Infusion of liquid	silicone oil

Basic parameters

Project	Condition	Minimum	Typical	Maximum	Unit	Notes
Nonlinearity	Other ranges	-0.3	±0.2	0.3	%FS	Note (1)
	25MPa	-0.4		0.4		
Hysteresis		-0.05	±0.03	0.05	%FS	
Repeatability		-0.05	±0.03	0.05	%FS	
Output signal under zero pressure		-2	±1	2	mV	
Output signal under full-scale span pressure	10kPa	30	-	-	mV	power supply: 1.5mA 1.5mA 10V 10V
	Other ranges	60	90	150	mV	
	10kPa	60	-	-	mV	
	Other ranges	98	100	102	mV	

Temp.effect on offset	10kPa Other ranges	-2 -1.5	± 1.5 ± 0.75	2 1.5	%FS	Note (2)
Sensitivity temperature drift		-1.5	± 0.75	1.5	%FS	Note (2)
Thermal hysteresis		-0.075	± 0.05	0.075	%FS	Note (2)
Long-term stability		-0.3	± 0.2	0.3	%FS/Year	

Note: (1) Calculated based on BFSL least squares method.

(2) Within the compensation temperature range, 0°C~60°C and -10°C~70°C refer to 30°C.

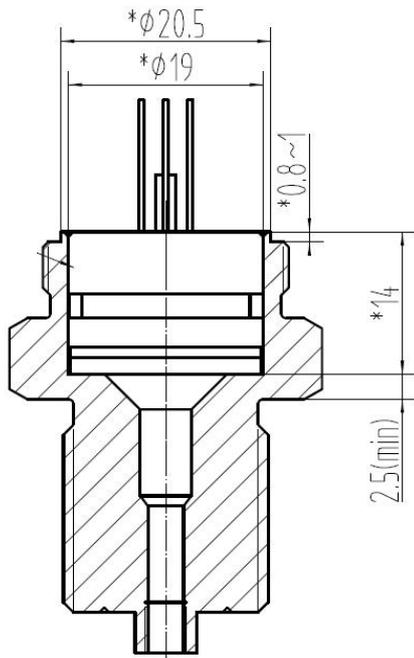
(3) After measuring pressure under the high and low temperatures, return to the room temperature.

Structure and dimensions

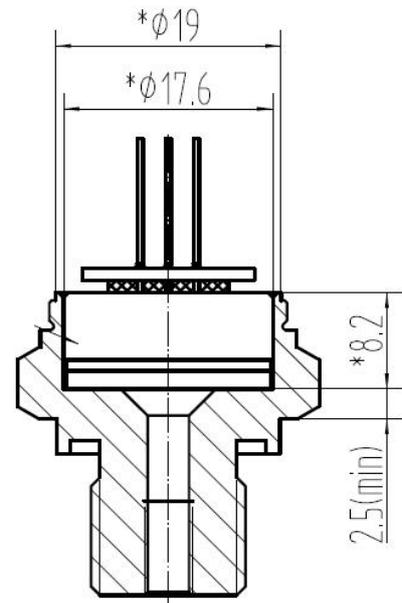
The size marked with * cannot be changed, and the remaining parts can be customized according to customers' needs.

Unit (mm)

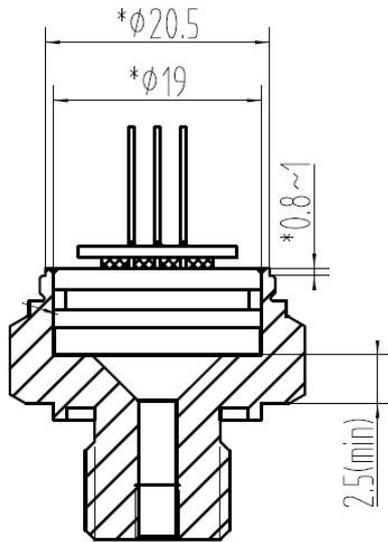
PC11-BH1 Model



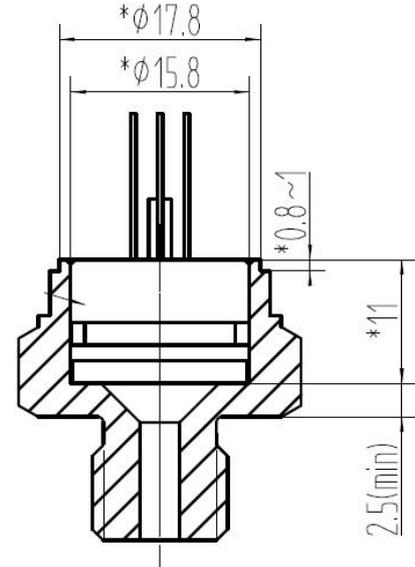
PC11-BH2 Model



PC11-BH3 Model



PC11-BH4 Model



Pressure range selection

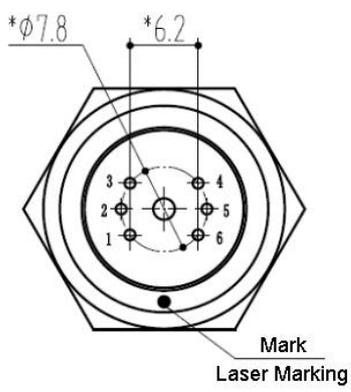
Range code	Pressure reference	Range	Overload pressure	Burst pressure	Available models
10k	G	0~10kPa	300%FS	600%FS	BH1、2model
20k	G	0~20kPa	300%FS	600%FS	BH1、2、3model
35k	G	0~35kPa	300%FS	600%FS	BH1、2model
70k	G	0~70kPa	300%FS	600%FS	BH1、2、3model
100k	G、A	0~100kPa	200%FS	500%FS	BH1、2、3、4model
160k	G、A	0~160kPa	200%FS	500%FS	BH1、2、3、4model
250k	G、A	0~250kPa	200%FS	500%FS	BH1、2、3、4model
400k	G、A	0~400kPa	200%FS	500%FS	BH1、2、3、4model
600k	G、A	0~600kPa	200%FS	500%FS	BH1、2、3、4model
1M	G、A	0~1MPa	200%FS	500%FS	BH1、2、3、4model
1.6M	G、A、S	0~1.6MPa	200%FS	500%FS	BH1、2、3、4model
2.5M	G、A、S	0~2.5MPa	200%FS	500%FS	BH1、2、3、4model
4M	S	0~4MPa	200%FS	400%FS	BH1、2、3、4model
6M	S	0~6MPa	200%FS	400%FS	BH1、2、3、4model
10M	S	0~10MPa	200%FS	40MPa	BH1、3、4model
16M	S	0~16MPa	200%FS	40MPa	BH1、4model
25M	S	0~25MPa	150%FS	40MPa	BH1、4model

Note: G gauge pressure, A absolute pressure, S sealed gauge pressure

Electrical connections

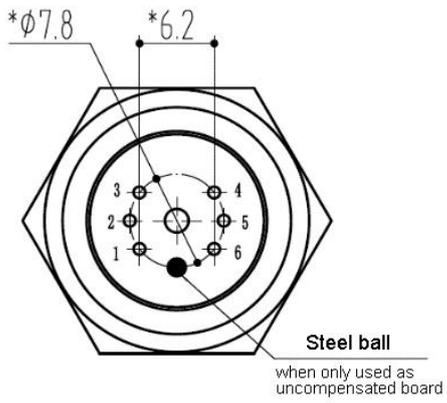
6-pin lead out for constant current compensation, constant voltage compensation needs to be confirmed with the technical team.

Unit (mm)

	<table border="1"> <thead> <tr> <th>Pin</th> <th>Defination</th> </tr> </thead> <tbody> <tr> <td>3</td> <td>Excitation positive (IN+)</td> </tr> <tr> <td>5</td> <td>Excitation Negative (IN-)</td> </tr> <tr> <td>2</td> <td>Output signal positive (OUT+)</td> </tr> <tr> <td>4</td> <td>Output signal negative (OUT-)</td> </tr> <tr> <td>1、6</td> <td>None</td> </tr> </tbody> </table>	Pin	Defination	3	Excitation positive (IN+)	5	Excitation Negative (IN-)	2	Output signal positive (OUT+)	4	Output signal negative (OUT-)	1、6	None
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1、6	None												

Definition of uncompensated pins

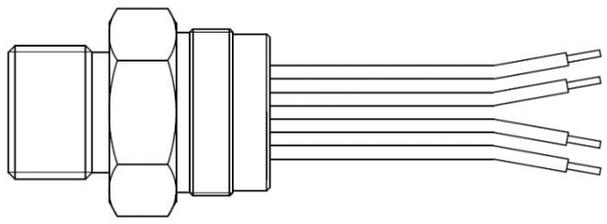
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4-wire

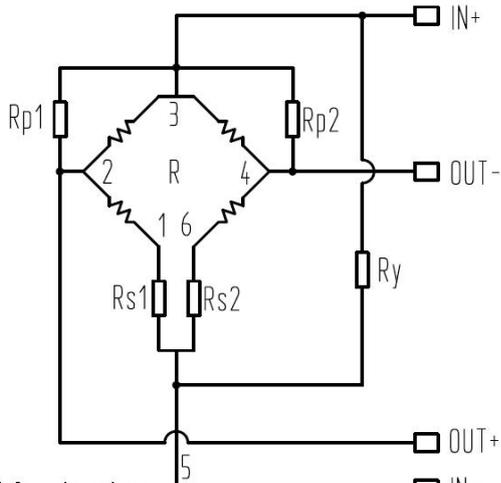
(The color and length of wires can be customized according to the actual needs of the customer.)

Unit (mm)

	<table border="1"> <thead> <tr> <th>Wire Color</th> <th>Defination</th> </tr> </thead> <tbody> <tr> <td>Red</td> <td>Excitation positive (IN+)</td> </tr> <tr> <td>Blue</td> <td>Excitation Negative (IN-)</td> </tr> <tr> <td>Yellow</td> <td>Output signal positive (OUT+)</td> </tr> <tr> <td>White</td> <td>Output signal negative (OUT-)</td> </tr> </tbody> </table>	Wire Color	Defination	Red	Excitation positive (IN+)	Blue	Excitation Negative (IN-)	Yellow	Output signal positive (OUT+)	White	Output signal negative (OUT-)
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Blue	Excitation Negative (IN-)										
Yellow	Output signal positive (OUT+)										
White	Output signal negative (OUT-)										

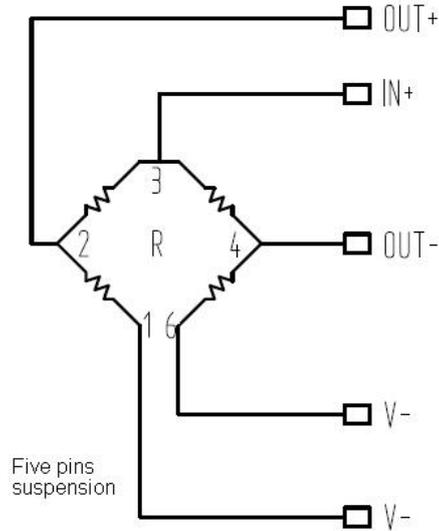
Circuit diagram

Circuit diagram of current compensation



1. 1~6 are pin numbers.
2. Choose one between Rp1 and Rp2.

Uncompensated circuit diagram



Model selection

PC11 - BH1 - 10k G 4w I1 C - C1

Standard model:
PC11
Customized model:
abbreviated as +11
(e.g. XT11)

Dimensions
BH1: $\phi 19 \times 14 \text{mm}$
BH2: $\phi 17.6 \times 8.2 \text{mm}$
BH3: $\phi 19 \times 8 \text{mm}$
BH4: $\phi 15.8 \times 11 \text{mm}$
(refer to "Structure and dimensions" on Page 3)

Range selection
(refer to "Pressure range selection" on Page 4)

Pressure reference
G: Gauge pressure
A: Absolute pressure
S: Sealed gauge pressure
Others

Pressure connection
C1: M20×1.5-6g
C2: G1/2
C3: G1/4
C4: NPT1/4
C5: NPT1/2
Others

Compensation selection
C: compensation
NC: No compensation

Excitation selection
I1: 1.5mA
U1: 10V
U2: 5V
Others

Electrical connection
6p: 6-pin
4w: 4-wire
Others

Example 1: PC11-BH1-10kG4w1C-C1

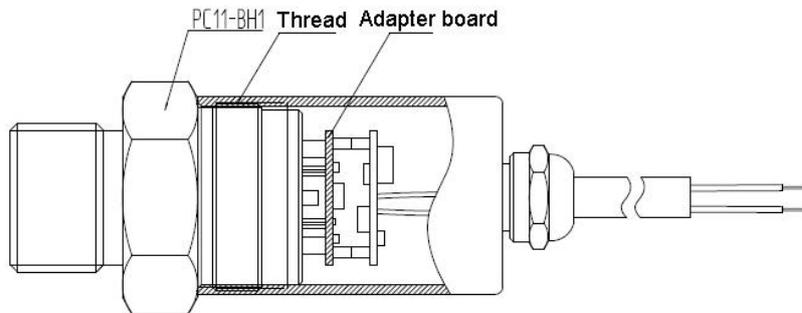
PC11-BH pressure sensor, used $\phi 19 \times 14$ base, measuring range 0~10kPa, gauge pressure, 4-wire lead out, 1.5mA excitation, compensation, pressure connection M20 \times 1.5-6g

Example 2: XT11-BH1-10kG4w1C-C1

XT11-BH1 pressure sensor customized for XT company, using $\phi 19 \times 14$ base, measuring range 0~10kPa, gauge pressure, 4-wire lead out, 1.5mA excitation, compensation, pressure connection M20 \times 1.5-6g

Application Case

This is a typical application diagram, using PC11-BH1 sensor to make a 4-20mA pressure transmitter, and the housing has a threaded fit.

**Customized Guide**

1 Customization content includes but is not limited to size and length of the hexnut, model and length of the interface thread, size of the runout groove, material of the pressure port, and the size of the air inlet.

2 Customization process:

- (1) Communicate with customers about product appearance and technical specifications;
- (2) Customer confirms product specification sheet;
- (3) Make samples. Customers conduct testing, verification, and confirmation;
- (4) Mass production.

3 After the customer confirms the samples, the minimum order quantity for customized products is 100 pieces.

4 If the customer does not have a clear target product for mass production and wants to try using our product, they can select from the shelf product catalog and purchase directly without a minimum order quantity limit.

Ordering tips

- 1 It can be selected for over range or down range, with amplitude controlled within $\pm 30\%$ FS.
- 2 The pressure methods include gauge pressure, absolute pressure, and sealed pressure.
 - (1) Gauge pressure refers to a measurement based on the current atmospheric pressure, generally greater than the current atmospheric pressure. Negative pressure is a special case of gauge pressure, referring to the conditions at the workplace that are lower than the current atmospheric pressure.
 - (2) Absolute pressure is referenced against a vacuum.
 - (3) Sealed gauge pressure refers to using the absolute pressure as the gauge pressure, and the benchmark is the air pressure at the production site. There is no gauge pressure above 6MPa, only sealed pressure.
- 3 Confirm the maximum overload of the system. The maximum overload of the system should be less than the overload protection limit of the sensor; otherwise, it may affect the product's durability or even damage the product.
- 4 The commonly used compensation method for the product is 1.5mA constant current compensation, and it is recommended to choose it first.
- 5 The materials and processes used to manufacture negative pressure sensors are different from those used to manufacture positive pressure sensors. Negative pressure sensors cannot be replaced by gauge pressure sensors.
- 6 If there are special requirements for performance parameters and functions of our products, please negotiate with our company.

Wotian reserves the right to make any change in this publication without notice. The information provided is believed to be accurate and reliable as of this product sheet.

Contact us

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