PC11-BL Pressure Sensor

Features

- Focusing on customization
- High reliability pressure chip
- Fully welded seal without O-ring
- High performance, high reliability
- Wide temperature compensation
- Absolute pressure, sealed gauge pressure
- With constant current and constant voltage excitation options
- 18 months warranty period

Applications

- Supporting pressure transmitter manufacturers

Industry

- Pressure control equipment
- Hydraulic equipment

PC11-BL1

PC11-BL2

PC11-BL3

PC11-BL4

Product overview

The PC11-BL pressure sensor includes 4 models. Its design concept is to sink the thread sensor into the pressure port and use high-strength welding at the rear end to solve the assembly problem of the front and rear threads. It offers high reliability in high-pressure range applications, and has a small longitudinal size and a large transverse size, making it the ideal choice for manufacturing 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 customers' needs.

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.

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	0~1.6MPa…100MPa (Absolute pressure, sealed gauge 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	-10℃~70℃
Operation temperature	-40℃~120℃
Storage temperature	-40℃~120℃
Insulation resistance	≥200MΩ/250VDC
Response time	≤1ms (rising to 90%FS)
Measurement medium	All liquids and gases compatible with 304
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 100MPa	-0.3 -0.55	±0.2	0.3 0.55	%FS	Note(1)
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		60	90	150	mV	
Temp.effect on offset		-1.5	±0.75	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 the BFSL least squares method.

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

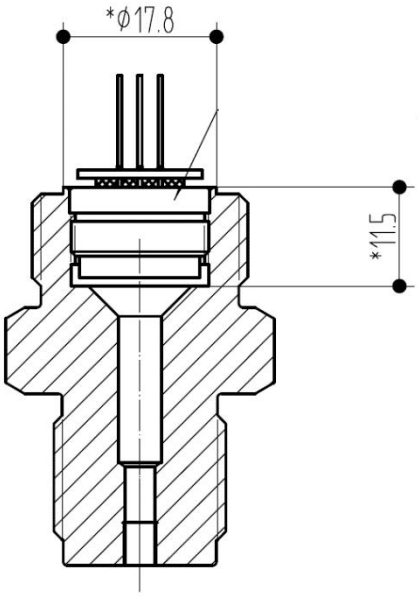
(3) After measuring pressure under the high and low temperatures, return to the room temperature.

Structure and dimensions

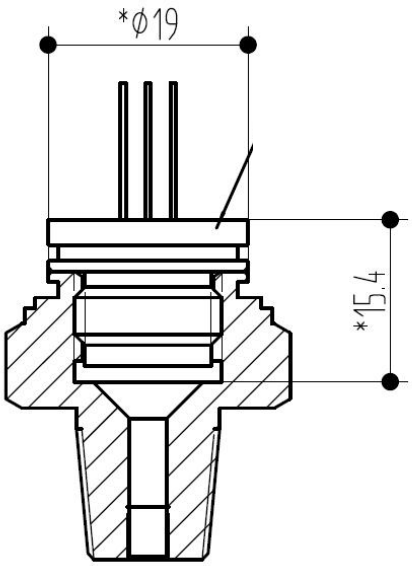
The size marked with * cannot be changed, and the remaining parts can be customized according to customers' needs.

Unit (mm)

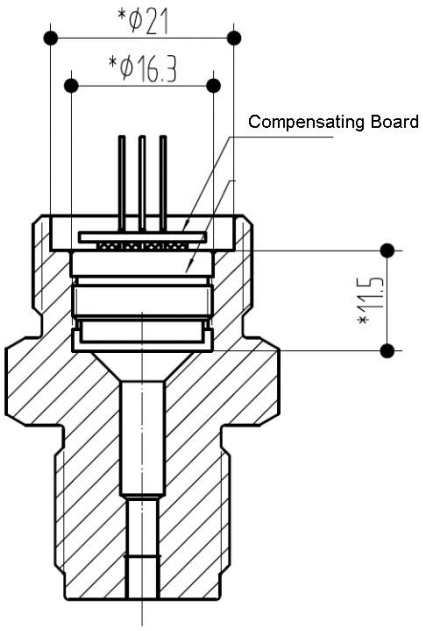
PC11-BL1 Model



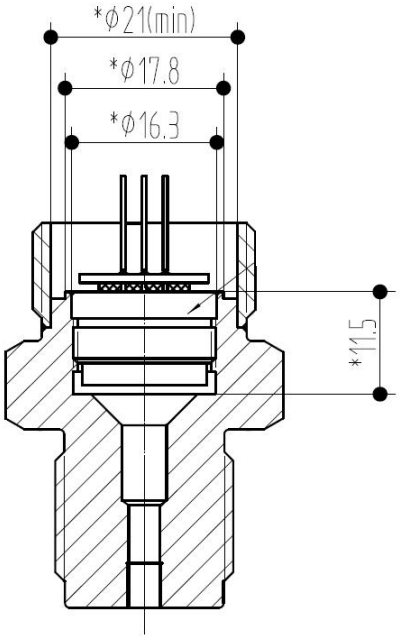
PC11-BL2 Model



PC11-BL3 Model



PC11-BL4 Model



Recommended use: M20 × 1.5、G1/2、NPT1/2、G1/4、NPT1/4. The front thread can be customized according to the actual needs of customers.

Pressure range selection

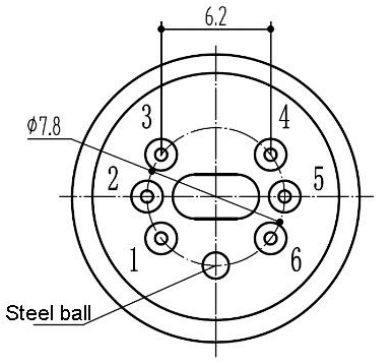
Range code	Pressure reference	Range	Overload pressure	Burst pressure	Available models
1.6M	A, S	0~1.6MPa	200%FS	500%FS	BH1、2、3、4model
2.5M	A, S	0~2.5MPa	200%FS	500%FS	BH1、2、3、4model
4M	A, S	0~4MPa	200%FS	400%FS	BH1、2、3、4model
6M	A, S	0~6MPa	200%FS	400%FS	BH1、2、3、4model
10M	A, S	0~10MPa	200%FS	400%FS	BH1、2、3、4model
16M	A, S	0~16MPa	200%FS	400%FS	BH1、2、3、4model
25M	A, S	0~25MPa	150%FS	400%FS	BH1、2、3、4model
40M	A, S	0~40MPa	150%FS	150MPa	BH1、2、3、4model
60M	A, S	0~60MPa	150%FS	150MPa	BH1、2、3、4model
100M	A, S	0~100MPa	120%FS	150MPa	BH1、2、3、4model

Note: A absolute pressure, S sealed gauge pressure, choose A if it is uncompensated.

Electrical connections

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

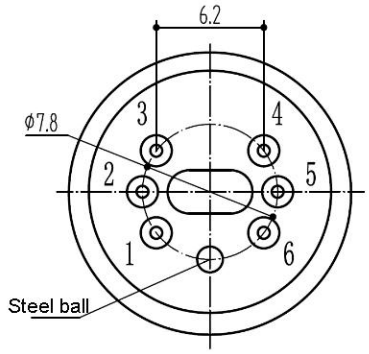
Unit (mm)



Pin	Defination
3	Excitation positive (IN+)
5	Excitation Negative (IN-)
2	Output signal positive (OUT+)
4	Output signal negative (OUT-)

Definition of uncompensated pins

Unit (mm)

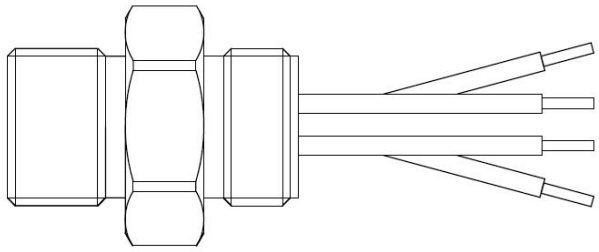


Pin	Defination
3	Excitation positive (IN+)
1、6	Excitation Negative (IN-)
2	Output signal positive (OUT+)
4	Output signal negative (OUT-)

4-wire

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

Unit (mm)

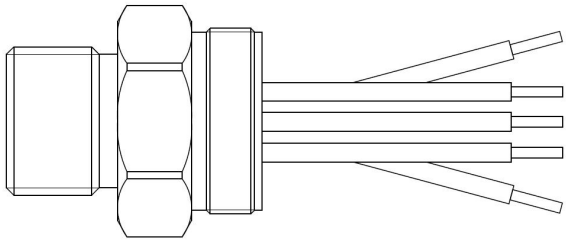


Wire Color	Defination
Red	Excitation positive (IN+)
Blue	Excitation Negative (IN-)
Yellow	Output signal positive (OUT+)
White	Output signal negative (OUT-)

5-wire

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

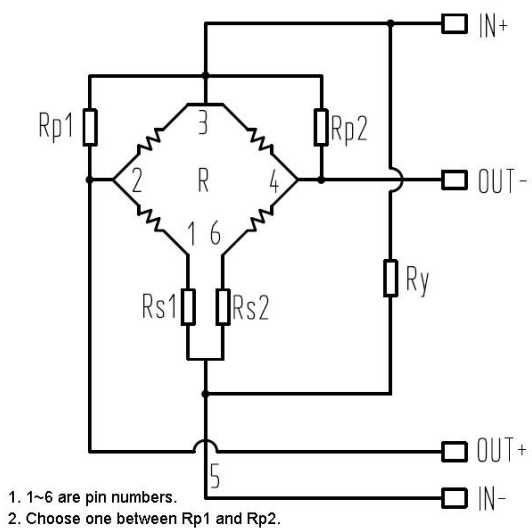
Unit (mm)



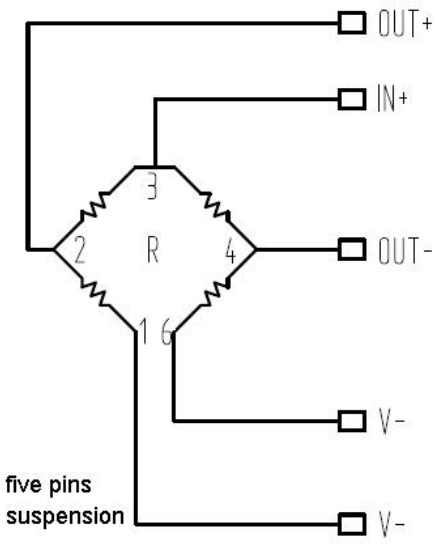
Wire Color	Defination
Red	Excitation positive (IN+)
Blue x2	Excitation Negative (IN-)
Yellow	Output signal positive (OUT+)
White	Output signal negative (OUT-)

Circuit diagram

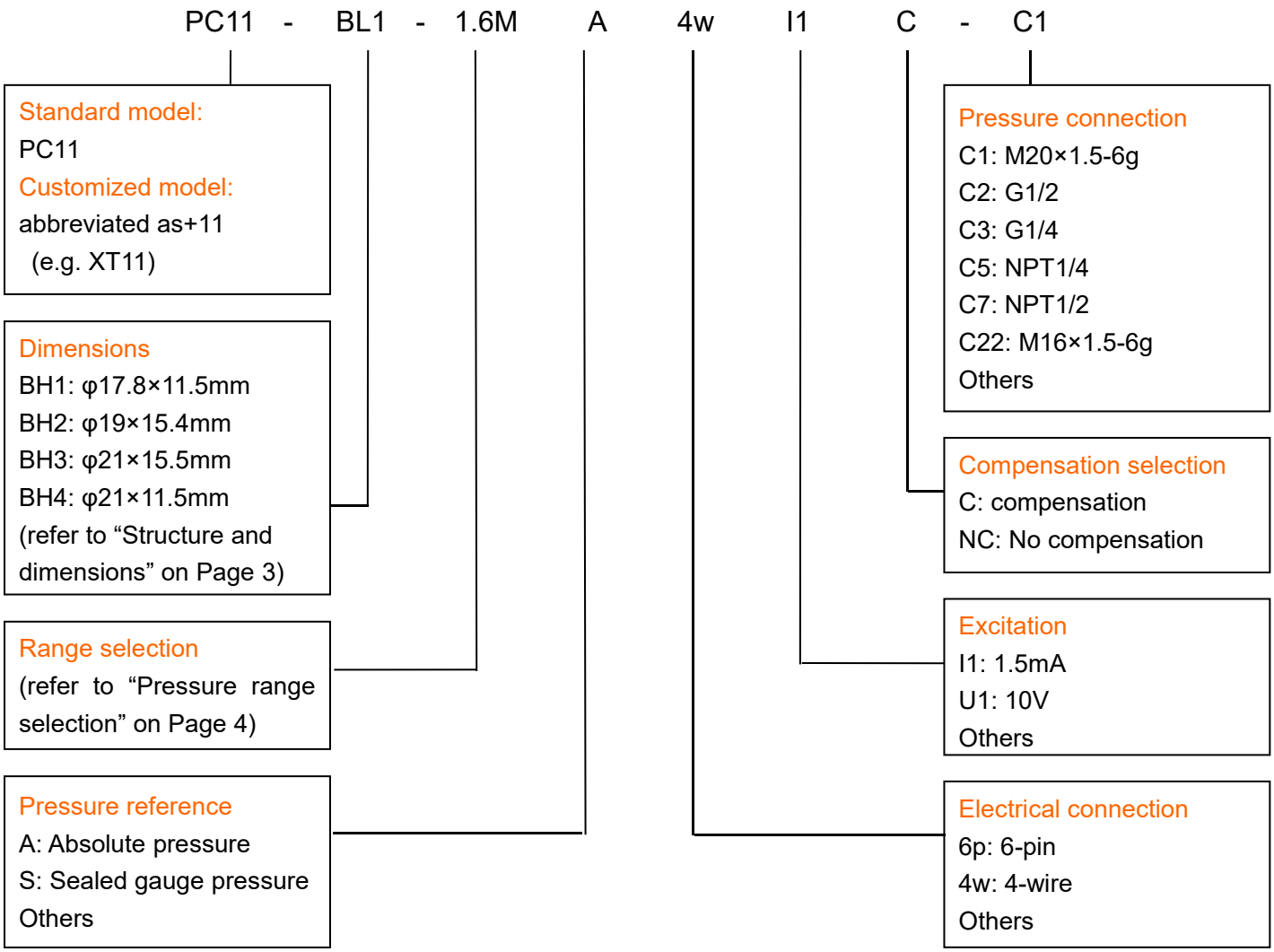
Circuit diagram of current compensation



Uncompensated circuit diagram



Model selection



Example 1: PC11-BL1-1.6MA4wI1C-C1

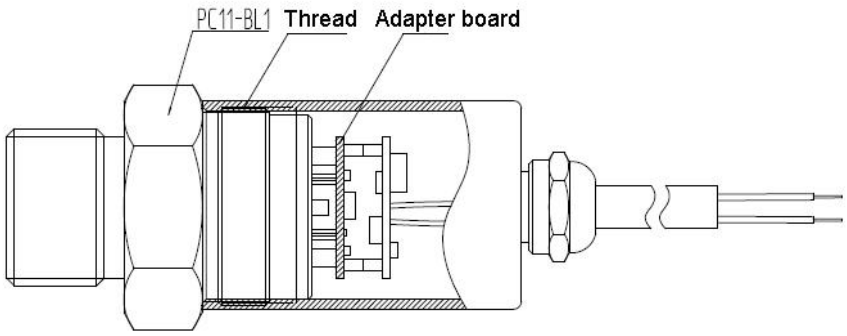
PC11-BL pressure sensor, measuring range 0~1.6MPa, absolute pressure, 4-wire lead out, 1.5mA excitation, compensation, pressure connection M20×1.5-6g.

Example 2: XT11-BL1-1.6MA4wI1C-C1

XT11-BL1 pressure sensor customized for XT company, measuring range 0~1.6MPa, absolute pressure, 4-wire lead out, 1.5mA excitation, compensation, pressure connection M20×1.5-6g.

Application Case

This is a typical application diagram, using a PC11-BL1 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, the diameter size of the air inlet, as well as compensation temperature range, leading out method, and so on.

2 Customization process:

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

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

4 If your company's demand is not high, you can choose from the shelf product catalog, which does not have a minimum order quantity limit.

Ordering tips

1 It can be selected for over range or down range, with amplitude controlled within ± 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 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. Both constant current and constant voltage excitation for uncompensated sensors are acceptable, but the 1.5mA constant current is recommended as all test data is measured under these conditions.

5 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.

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