PC11-BQ Fully Welded Pressure Sensor

Feature

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

Applications

- Supporting pressure transmitter manufacturers
- Supporting liquid level transmitter manufacturers
- Fire protection and medical oxygen pressure
- Combustible gas detection

Industry

- Pressure control equipment
- Hydraulic equipment
- Liquid level control equipment
- Gas equipment
- Low temperature equipment

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-BQ1 PC11-BQ2 PC11-BQ3 PC11-BQ4

Product Overview

The PC11-BQ pressure sensor has provided customers with four designs, and it has successfully provided over a hundred customers with such a solution: welding the pressure sensor and interface pressure port together, fundamentally eliminating the problem of O-ring sealing leakage. It has high reliability, and is compact in size, making it the best choice for making highly reliable and high-quality pressure transmitters and liquid level transmitters. In order to provide a clearer description of this product, 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.

BQ1 and BQ2 are suitable for pressure transmitters with shell diameters of φ24mm or φ27mm. The total length of BQ2 is shorter than BQ1.

BQ3 is suitable for making outer diameter φ19mm liquid level transmitters.

BQ4 is suitable for making pressure transmitters with a shell diameter of φ22 or liquid level transmitters with the outer diameter of φ15.8mm.

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.

At the same time, there are a small number of standard shelf products for customers to purchase directly.

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	BQ1 model: -100~0~10kPa... 25MPa (gauge pressure, absolute pressure, sealed gauge pressure) BQ2 model: -100~0~10kPa... 25MPa (gauge pressure, absolute pressure, sealed gauge pressure) BQ3 model: 0~10kPa... 100kPa (gauge pressure) BQ4 model: -100~0~100kPa... 25MPa (gauge pressure, 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	0℃~60℃ (range ≤ 70kPa); - 10℃~70℃ (other ranges).
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 316L.
Mechanical vibration	20g (20~5000HZ)
Shock	100g (10ms)
Durability	1×10^6 (cycles)

Structural performance parameters	
Diaphragm material	316L
Material of pressure port	SS304 or SS316L
Infusion of liquid	Silicone oil

Basic parameters

Project	Condition	Minimum	Typical	Maximum	Unit	Notes
Nonlinearity	Other ranges 25MPa	-0.3 -0.4	±0.2	0.3 0.4	%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	10kPa Other ranges 10kPa Other ranges	30 60 60 98	- 90 - 100	- 150 - 102	mV mV mV mV	power supple: 1.5mA 1.5mA 10V 10V
Zero temp. drift	10kPa Other ranges	-2 -1.5	±1.5 ±0.75	2 1.5	%FS	Note(2)

Sensitivity temp. drift		-1.5	±0.75	1.5	%FS	Note(2)
Thermal hysteresis		-0.075	±0.05	0.075	%FS	Note(3)
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℃.

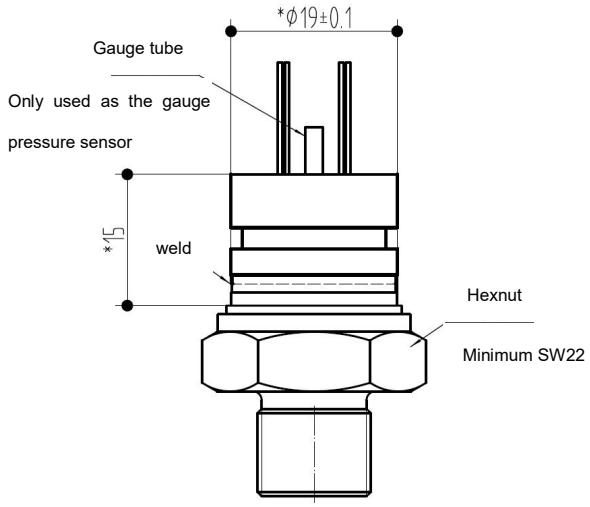
(3) After measuring pressure under the high and low temperatures, return to the room temperature.

Structure and dimensions

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

Unit (mm)

PC11-BQ1 model

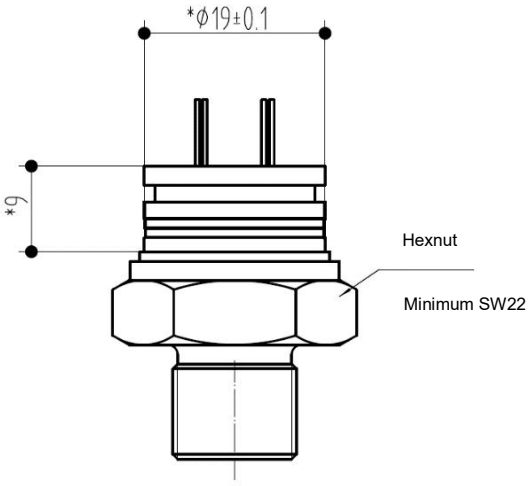


Recommend:

M20 × 1.5, G1/2, NPT1/2, G1/4, NPT1/4

Pressure connection can be customized.

PC11-BQ2 model

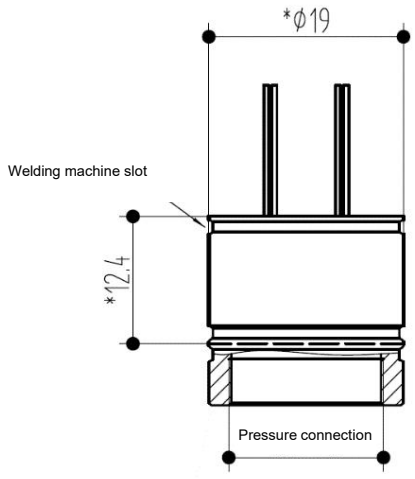


Recommend:

M20 × 1.5, G1/2, NPT1/2, G1/4, NPT1/4

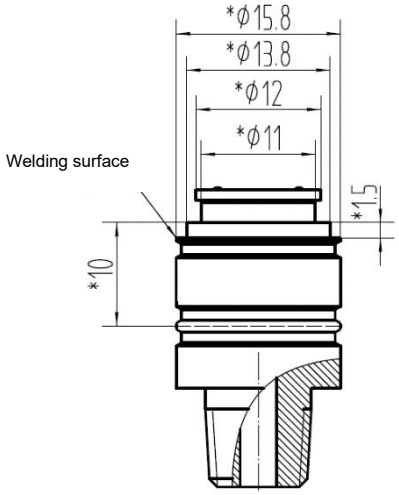
Pressure connection can be customized.

PC11-BQ3 model



Pressure connection can be customized.

PC11-BQ4 model



Pressure connection can be customized.

Pressure range selection

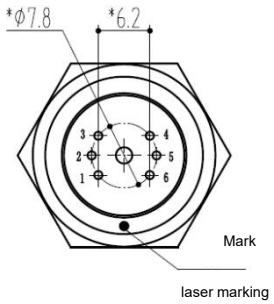
Range code	Pressure reference	Range range	Overload pressure	Burst pressure	Available models
10k	G	0~10kPa	300%FS	600%FS	BQ1、2、3model
20k	G	0~20kPa	300%FS	600%FS	BQ1、2、3model
35k	G	0~35kPa	300%FS	600%FS	BQ1、2、3model
70k	G	0~70kPa	300%FS	600%FS	BQ1、2、3model
100k	G, A	0~100kPa	200%FS	500%FS	BQ1、2、3、4model
250k	G	0~250kPa	200%FS	500%FS	BQ1、2、4model
400k	G	0~400kPa	200%FS	500%FS	BQ1、2、4model
600k	G	0~600kPa	200%FS	500%FS	BQ1、2、4model
1M	G	0~1MPa	200%FS	500%FS	BQ1、2、4model
1.6M	G, A, S	0~1.6MPa	200%FS	500%FS	BQ1、2、4model
2.5M	G, A, S	0~2.5MPa	200%FS	500%FS	BQ1、2、4model
4M	A, S	0~4MPa	200%FS	400%FS	BQ1、2、4model
6M	A, S	0~6MPa	200%FS	400%FS	BQ1、2、4model
10M	A, S	0~10MPa	200%FS	40MPa	BQ1、2、4model
16M	A, S	0~16MPa	200%FS	40MPa	BQ1、2、4model
25M	A, S	0~25MPa	150%FS	40MPa	BQ1、2、4model
(-100~0)k	G	-100~0kPa	200kPa	500kPa	BQ1、2、4model

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

Electrical connections

6-pin for constant current compensation (6-pin is not recommended for constant voltage compensation)

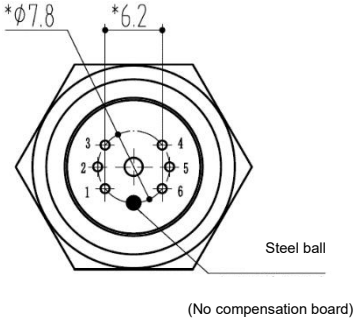
Unit (mm)



Pin	Defination
3	Excitation positive (IN+)
5	Excitation negative (IN-)
2	Output signal positive (OUT+)
4	Output signal negative (OUT-)
1、6	None

Uncompensated 6-pin lead out

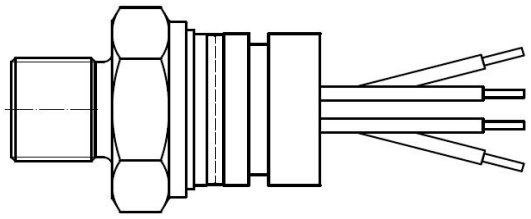
Unit (mm)



Pin	Defination
3	Excitation positive (IN+)
1、6	Excitation negative (IN-)
2	Output signal positive (OUT+)
4	Output signal negative (OUT-)
5	None

4-wire (default length of 110mm, can also be customized according to customers' needs)

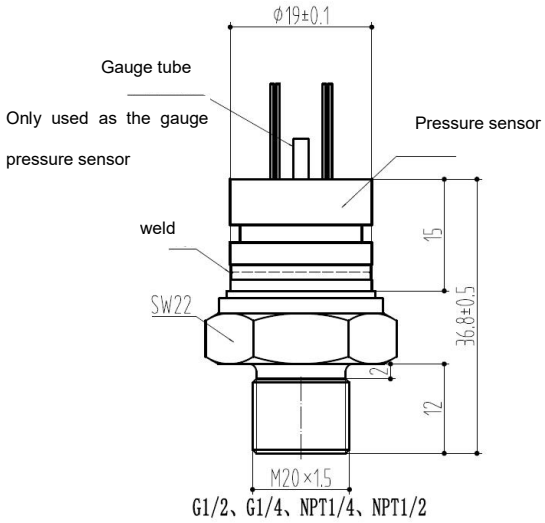
Unit (mm)



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

Whether compensated or not, the wiring definition for constant current compensation or constant voltage compensation is the same.

Shelf product catalog



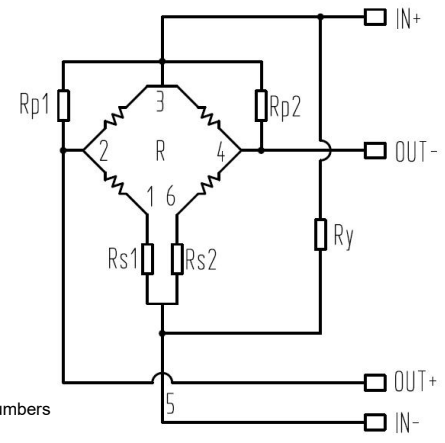
PC11-BQ1

1: PC11-BQ1-35kG4WI1C-C1
2: PC11-BQ1-35kG4WI1C-C3
3: PC11-BQ1-100kG4WI1C-C1
4: PC11-BQ1-100kG4WI1C-C3
5: PC11-BQ1-1MG4WI1C-C1
6: PC11-BQ1-1MG4WI1C-C3
7: PC11-BQ1-25MS4WI1C-C1
8: PC11-BQ1-25MS4WI1C-C3

Please contact us for more specifications.

Circuit diagram

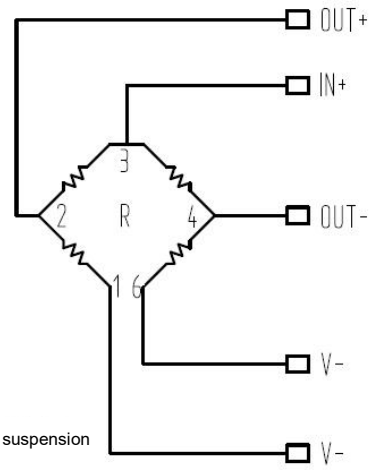
Circuit diagram of constant current compensation



1) 1-6 are pins numbers

2) Choose one between Rp1 and Rp2

Uncompensated circuit diagram



Five pins suspension

Model selection

PC11 - BQ1 - 10k G 4w I1 C - C1

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

Dimensions
BQ1: φ19×15mm
BQ2: φ19×9mm
BQ3: φ19×12.4mm
BQ4: φ15.8×10mm
(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
C5: NPT1/4
C7: NPT1/2
C22: M16×1.5-6g
Others

Compensation
C: compensation
NC: No compensation

Excitation
I1: 1.5mA
U1: 10V
Others

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

Example 1: PC11-BQ1-10kG4wI1C-C1

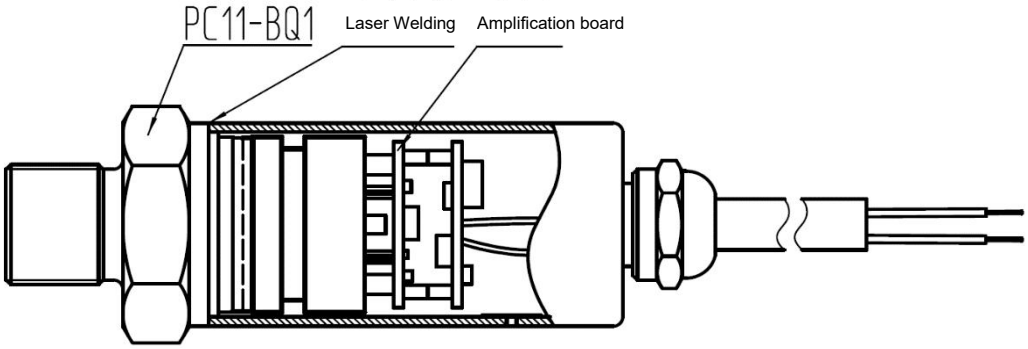
PC11-BQ1 pressure sensor, used φ19×15mm base, measuring range: 0~10kPa, gauge pressure, 4-wire lead out, 1.5mA constant current excitation, temperature compensation, pressure connection M20×1.5-6g.

Example 2: XT11-BQ1-10kG4wI1C-C1

XT11-BQ1 pressure sensor, customized for XT company, using φ19×15 base, measuring range 0~10kPa, gauge pressure, 4-wire lead out, 1.5mA constant current excitation, temperature compensation, pressure connection M20×1.5-6g.

Application Cases

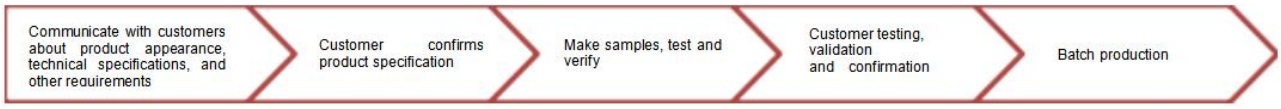
This is a typical application diagram, using PC11-BQ1 to make a 4-20mA pressure transmitter with a welded housing.



Customized Guide

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

2 Customization process



3 After the customer confirms the samples, the minimum order quantity for bulk procurement 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 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.

(4) An uncompensated pressure measurement can only be gauge or absolute; there is no sealed

reference.

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 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.

Contact us

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