PC50 Piezoresistive Silicon Pressure Sensor

Features

- With constant current excitation
- Customized pressure die
- Wide temperature compensation
- Compensation plate with glue filling for moisture-proof protection
- Φ19mm standard OEM
- All made of 316L material
- High performance, all solid, high reliability
- 18 months warranty period

Applications and industries

- Process control systems
- Pressure calibration instruments
- Refrigeration equipment and HVAC control
- Hydraulic systems and valves
- Level measurement
- Biomedical instruments
- Ships and navigation
- Aircraft and avionics systems
- Weaponry

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.

Product overview

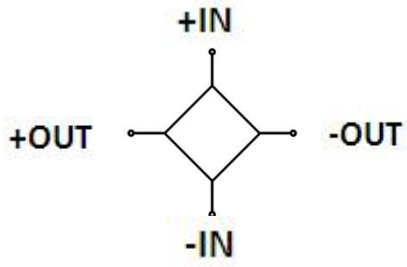
PC50 Piezoresistive Silicon Pressure Sensor is the core component for producing pressure sensors and pressure transmitters; as a kind of pressure sensitive elements with high performance, it can be conveniently processed through amplifying, and assembled into the transmitter with the standard signal output.

PC50 sensor packages piezoresistive silicon sensitive pressure die into 316L stainless steel housing, the external pressure is transmitted to the sensitive die through the stainless steel diaphragm and internally sealed silicon oil; the sensitive die does not directly contact with the measured medium, so as to form all solid structure of pressure measurement, so this product can be applied to a variety of occasions, including harsh corrosive medium environment.

PC50 sensor adopts O-ring for pressure sealing, easy to install. Our company can also undertake the special customization according to the requirements of the customers, for example, all-welded structure, wide temperature compensation, highly reliable, anti-strong shock and anti-vibration pressure sensors, especially for supporting the national defense weaponry.

Equivalent circuit

(1) 4 wires



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	
Pressure range	0～35kPa…100MPa
Pressure reference	Gauge pressure, Absolute pressure, Sealed gauge pressure
Excitation	1.5mA recommended
Input impedance	Constant current: 2kΩ～5kΩ
Electrical connection	Silica gel soft wire
Compensated temp.	0℃～60℃ (＜70kPa); -10℃～70℃ (other ranges)
Operating temp.	-40℃～120℃
Storage temp.	-40℃～120℃
Insulation resistance	≥200MΩ/250VDC
Response time	≤1ms (Up to 90%FS)
Measurement medium	All the liquids and gases compatible with 316L
Mechanical vibration	20g (20～5000HZ)
Shock	100g (10ms)
Service life	1×10^6(cycles)
Structural performance parameters	
Diaphragm material	316L
Housing material	316L
Perfusion liquid	Silicon oil
Sealing ring	NBR or FKM

Basic parameters						
Item	**Condition**	**Min**	**Typical**	**Max**	**Unit**	**Note**
Nonlinearity			0.2	0.3	%FS	Note (1)
Hysteresis			0.03	0.05	%FS	
Repeatability			0.03	0.05	%FS	
Zero output		-2	±1	2	mV	
Full span output	1.5mA	60	90	140	mV	Note (2)
Zero temp. coefficient			1.2	1.5	%FS	Note (3)
Sensitivity temp. coefficient			1.2	1.5	%FS	Note (3)
Thermal hysteresis			0.075	0.1	%FS	Note (4)
Long-term stability		-	0.2	0.3	%FS/year	

Note:

(1) Calculate according to BFSL least square method.

(2) Under the excitation of 1.5mA, for different pressure ranges, the outputs are different; the outputs for smaller pressure ranges are smaller, and the outputs for large pressure ranges are larger; if the customers need detailed range information, please ask for the information from our company before placing the order.

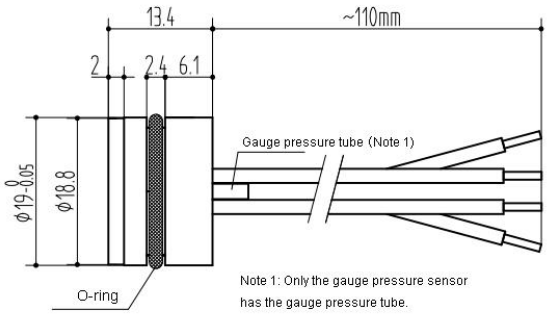
(3) Within the compensation temperature scope, for 0℃ ～ 60℃ and -10℃ ～ 70℃, the midpoint reference can be 30℃.

(4) After passing high and low temperature, return to the reference temperature.

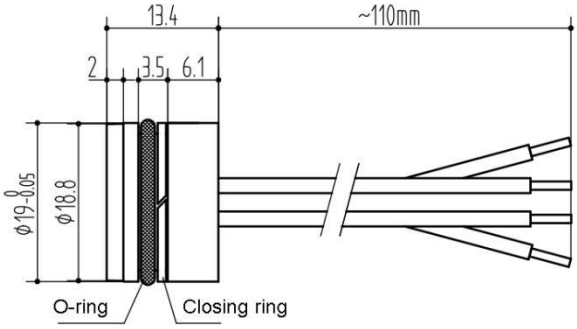
Outline dimension

Unit (mm)

Pressure range≤10MPa

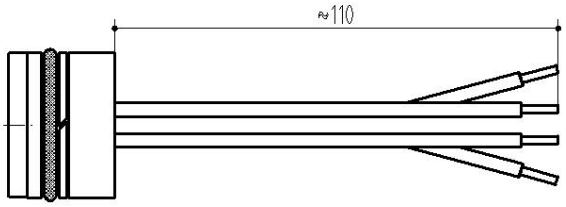


Pressure range＞10MPa



Electrical connection Unit (mm)

4 wires (4w)



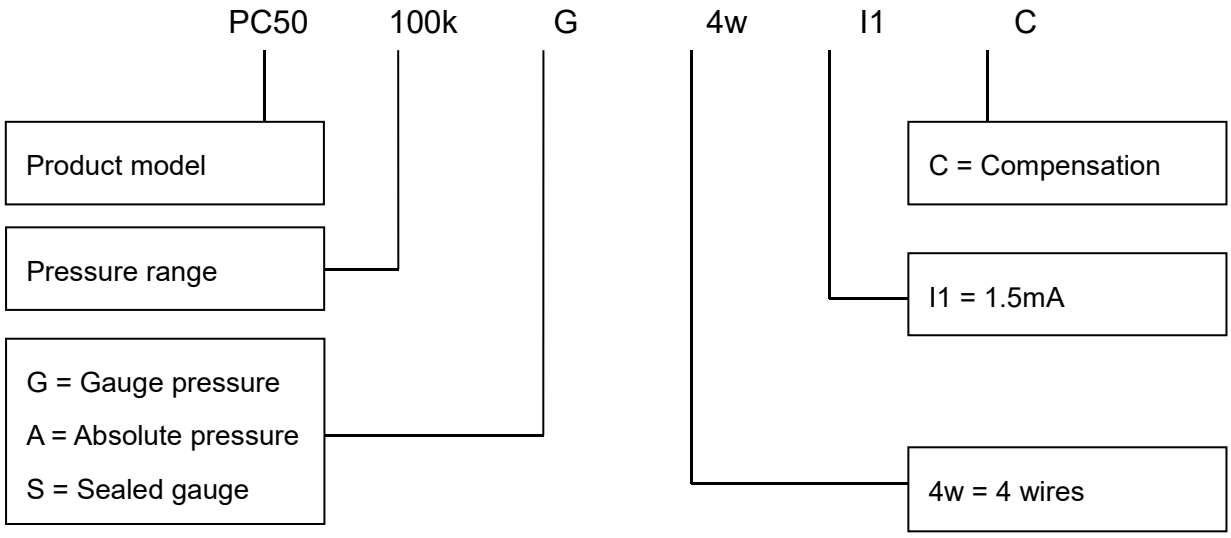
Wire color	Definition
Red	Excitation+ (IN+)
Blue	Excitation- (IN-)
Yellow	Output+(OUT+)
White	Output-(OUT-)

Pressure range selection

Pressure range code	Pressure reference	Pressure range	Overpressure	Burst pressure	O-ring
35k	G	0～35kPa	300%FS	600%FS	NBR
70k	G	0～70kPa	300%FS	600%FS	NBR
100k	G, A	0～100kPa	200%FS	500%FS	NBR
250k	G, A	0～250kPa	200%FS	500%FS	NBR
500k	G, A	0～500kPa	200%FS	500%FS	NBR
1M	G, A	0～1MPa	200%FS	500%FS	NBR
1.6M	G, S	0～1.6MPa	200%FS	500%FS	NBR
2.5M	G, S	0～2.5MPa	200%FS	500%FS	NBR
4M	S	0～4MPa	200%FS	400%FS	NBR
6M	S	0～6MPa	200%FS	400%FS	FKM
10M	S	0～10MPa	200%FS	400%FS	FKM
16M	S	0～16MPa	200%FS	400%FS	FKM
25M	S	0～25MPa	150%FS	300%FS	FKM
40M	S	0～40MPa	150%FS	300%FS	FKM
60M	S	0～60MPa	150%FS	300%FS	FKM
100M	S	0～100MPa	150%FS	300%FS	FKM

Note: G stands for gauge pressure, A, absolute pressure, S, sealed gauge pressure.

How to order



Example: PC50-100kG4wI1C

PC50 pressure sensor, pressure range 100kPa, gauge pressure, 4 wires, 1.5mA excitation, current compensation.

Ordering tips

1 Pressure range can be selected higher or lower than actual conditions but should be within ±30%FS.
2 Pressure reference consists of gauge pressure, absolute pressure and sealed gauge pressure.

(1) Gauge pressure is based on the current atmospheric pressure. Generally, it refers to the measurement of pressure which is greater than the current atmospheric pressure. Negative pressure is a special case of gauge pressure. It refers that there is such working condition that the pressure of work site is lower than the current atmospheric pressure.

(2) Absolute pressure is based on vacuum.

(3) As for sealed gauge pressure, PC50 uses absolute pressure die for gauge pressure product based on the atmospheric pressure of production site. For pressure range above 4MPa, gauge pressure cannot be selected, but only sealed gauge pressure.

3 Confirm the maximum overload of the applied system, which should be less than the overload protection limit of the sensor, otherwise it will affect the product life or even damage the product.
4 The commonly used compensation of the product is 1.5mA constant current compensation. Suggest selecting this option with priority.
5 The material and process for manufacturing negative pressure sensors are not all the same with those of positive pressure sensors. So gauge pressure sensors cannot be used as substitute of negative pressure sensors.
6 For special requirements on performance parameters and functions of the product, please contact us.

Contact us

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