PC50 Piezoresistive Silicon Pressure Sensor

Features

- With constant current excitation
- Customized pressure die
- Wide temperature range compensation
- The compensated board with glue for moisture-proof protection
- StandardΦ19mm, customization for other diameter
- All SS316L material
- High performance, high reliability
- 18 months guarantee

Applications

- 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

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

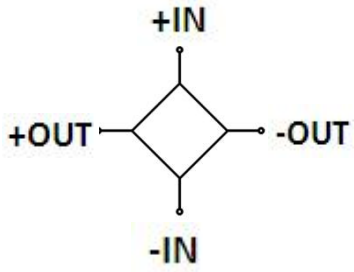
PC50 Piezoresistive Silicon Pressure Sensor is the core component for producing pressure sensors and pressure transmitters; as a kind of pressure sensitive elements with high performance, it can be conveniently processed through amplifying, and assembled into the transmitter with the standard signal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

PC50 sensor packages piezoresistive silicon sensitive pressure die into SS316L 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 diaphragm sensing measurement structure, so it can be applied to a variety of occasions, including harsh corrosive medium environment.PC50 sensor adopts O-ring for pressure sealing, ensuring easy installation.

Our company also provide customization per user requirements, such as all-welded structure, wide temperature compensation, highly reliable, anti-strong shock and anti-vibration pressure sensors.

Equivalent circuit

4-wire lead out



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	Silicon 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%F.S.)
Measurement medium	All the liquids and gases compatible with SS316L
Mechanical vibration	20g (20～5000HZ)
Shock	100g (10ms)
Service life	1×10^6(cycles)
Structural performance parameters	
Diaphragm material	SS316L
Housing material	SS316L
Oil filling	Silicon oil
Sealing ring material	NBR or FKM

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

Note:

1.Calculate according to BFSL least square method.

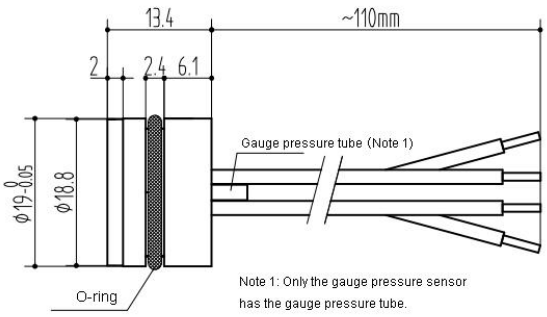
2.Under 1.5mA excitation, the output varies with different measuring ranges: the output is relatively low for small measuring ranges and relatively high for large ones. For detailed range specifications, please contact our company before placing an order.

3.Within the compensated temperature range 0ºC ~ 60ºC(≤70kPa) or -10ºC ~ 70ºC(other ranges), the middle point temperature is 30ºC for reference.

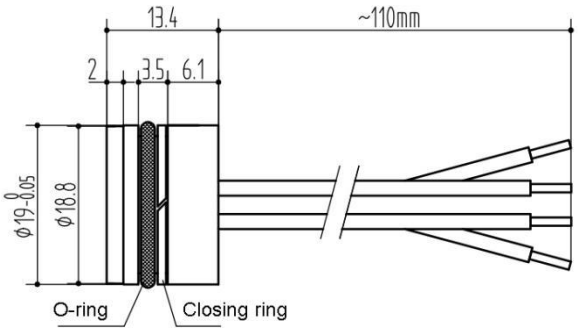
4.After measuring pressure under the high and low temperatures, return to the reference temperature.

Structure and dimension (in mm)

Pressure range≤10MPa

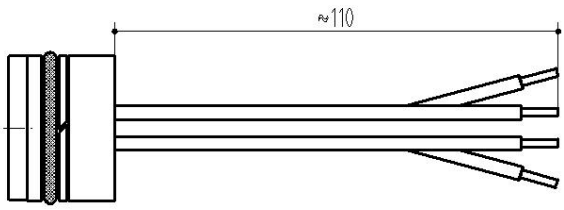


Pressure range＞10MPa



Electrical connection (in mm)

4 wires (4w) for constant current excitation



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

Pressure range selection

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

Note: G: Gauge pressure, A: Absolute pressure, S: Sealed gauge pressure

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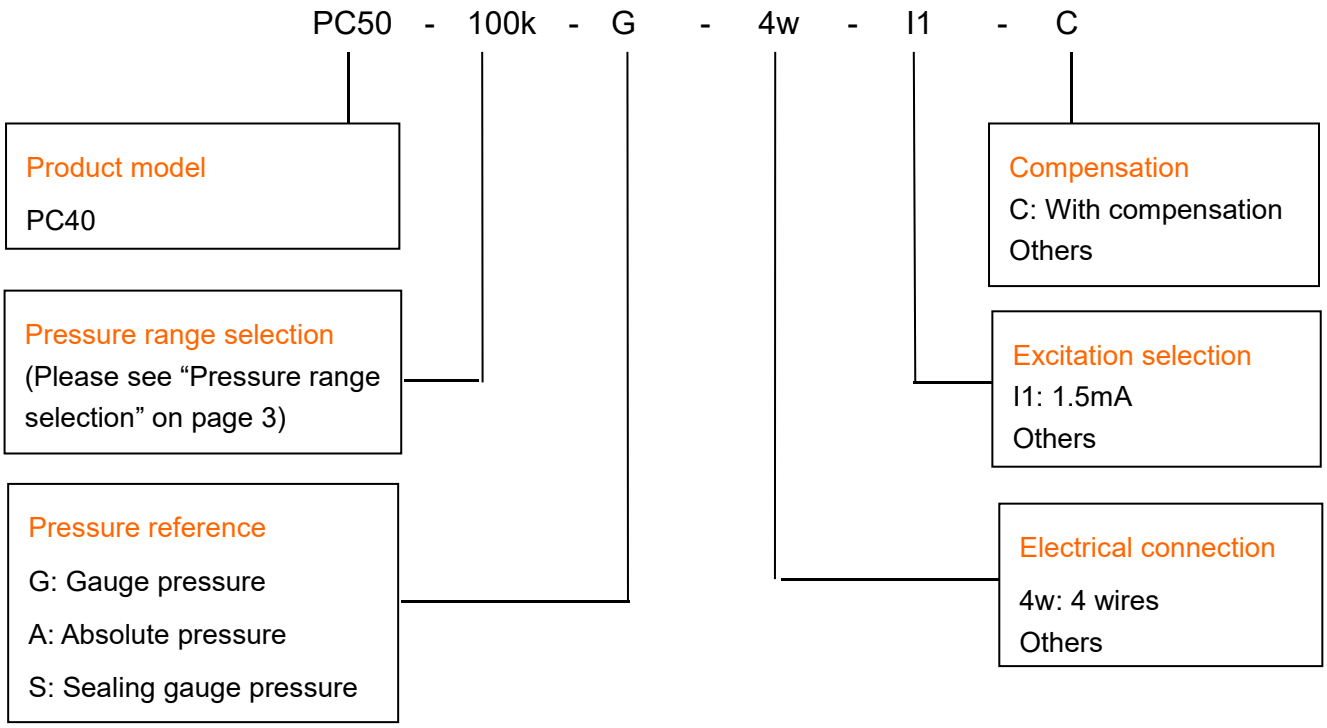
Ordering information



Example of ordering information: PC50 - 100k - G - 4w - I1 - C

Product model: PC50, 100k: pressure range 100kPa, G: gauge pressure, 4w: 4-wire electrical connection, I1: 1.5mA excitation, C: with compensation.

Ordering tips

1 Over-range or under-range use is allowed, recommended within ±30% F.S..

2 Pressure reference: 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 that is greater than the current atmospheric pressure.

(2) Absolute pressure is based on a vacuum.

(3) For sealed gauge pressure, absolute pressure is adopted as gauge pressure with reference to on-site atmospheric pressure during production. For pressure ranges 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’s service life or even damage the product.

4 1.5mA constant current compensation is standard. Suggest selecting this option with priority.

5 Negative pressure sensors differ completely in materials and processes from positive pressure sensors, so it cannot be replaced by standard gauge pressure sensors.

6 For special requirements on performance parameters and functions of the product, please contact us.

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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