

PC40 Silicon Piezoresistive Pressure Sensor

Features

- Constant current excitation
- Imported TDK pressure die
- Wide temperature compensation
- Compensation board with protection against moisture
- $\Phi 19\text{mm}$ standard OEM
- All 316L material
- High performance, all solid, high reliability
- 18 months warranty period

Uses 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 and Equipment



Product Overview

PC40 piezoresistive silicon pressure sensor is the core component for the manufacture of pressure sensors and pressure transmitters. As high-performance pressure sensitive component, PC40 can be easily amplified and assembled into the pressure transmitters with standard signal output.

PC40 packages diffused silicon pressure sensitive die to 316L stainless steel housing. External pressure is transmitted to pressure sensitive die through stainless steel diaphragm and internally sealed silicon oil. Pressure sensitive die does not directly contact with measured medium, forming all solid structure of pressure measurement. So the product can be applied to a variety of occasions, including harsh corrosive medium environment.

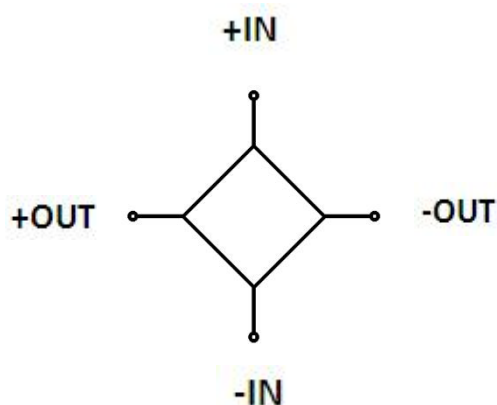
PC40 uses O-ring for pressure seal, which is easy to install. The company can also undertake special customization based on the needs of users, such as pressure sensors of all welded structure, wide temperature compensation, high reliability, anti-shock and anti-vibration sensors, especially for national defense weapons and equipment.

Note:

- 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

Equivalent circuit

(1) 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 ~ 40kPa... 16MPa
Pressure reference	Gauge pressure, Absolute pressure, Sealed gauge pressure
Excitation	Recommended 1.5mA
Input impedance	Constant current: 2k Ω ~ 6k Ω
Electrical connection	Silicon soft wire
Compensation temp.	0° C ~ 60° C (\leq 70kPa) -10° C ~ 70° C (other ranges)
Operating temp.	-40° C ~ 120° C
Storage temp.	-40° C ~ 120° C
Insulation resistance	\geq 200 m Ω / 250 VDC
Response time	\leq 1ms (up to 90%FS)
Measured medium	All the liquids and gases compatible with 316L
Mechanical vibration	20g (20~5000HZ)
Shock	100g /10ms
Durability	1 \times 10 ⁶ (pressure cycles)

Structural performance parameters

Diaphragm material	316L
Housing material	316L
Oil filling	Silicone oil
Sealing ring	NBR or fluorine rubber

Basic parameters

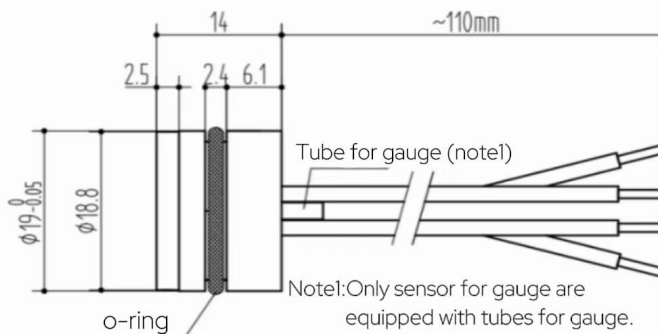
Items	Condition	Min	Nominal	Max	Unit	Notes
Nonlinearity			0.2	0.5	%FS	Note (1)
Hysteresis			0.03	0.05	%FS	
Repeatability			0.03	0.05	%FS	
Zero output		-2	\pm 1	2	mV	
Full span output	1.5 mA	60	90	150	mV	Note (2)
Zero temp. coefficient			1	1.5	%FS	Note (3)
Sensitivity temp. coefficient			1	1.5	%FS	Note (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) With a 1.5mA excitation, the outputs vary across different ranges: smaller ranges yield lower outputs, while larger ranges produce higher outputs. For detailed range specifications, please contact our company for inquiry before placing an order.
- (3) Within the compensated temperature range of 0°C to 60°C and -10°C to 70°C, the midpoint reference is set at 30°C.
- (4) After passing high and low temperature, return to the reference temperature.

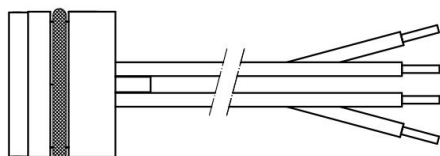
Dimensions

Units (mm)



Electrical connection (in mm)

4 wires (4w)



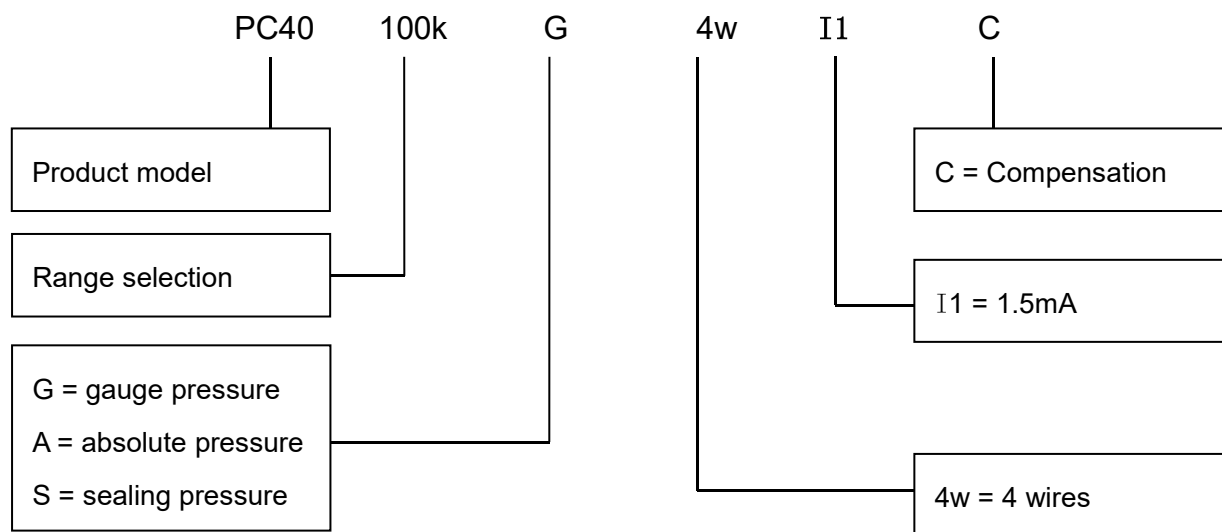
Wire color	Definition
Red	Excitation+(IN+)
Blue	Excitation-(IN-)
Yellow	Output+(OUT+)
White	Output-(OUT-)

Pressure range selection

code	Pressure reference	Pressure range	Overpressure	Burst pressure	O-ring
40k	G	0 ~ 40kPa	200% FS	400% FS	NBR
100k	G	0 ~ 100kPa	200% FS	400% FS	NBR
160k	A	0 ~ 160kPa	200% FS	400% FS	NBR
400k	G, A	0 ~ 400kPa	200% FS	400% FS	NBR
600k	G, A	0 ~ 600kPa	200% FS	400% FS	NBR
1M	G, A	0 ~ 1MPa	200% FS	400% FS	NBR
1.6 M	G, A, S	0 ~ 1.6MPa	200% FS	400% FS	NBR
2.5 M	G, A, S	0 ~ 2.5MPa	200% FS	400% FS	NBR
4M	G, S	0 ~ 4MPa	200% FS	300% FS	NBR
10M	S	0 ~ 10MPa	200% FS	300% FS	Fluorine rubber
16M	S	0 ~ 16MPa	150% FS	200% FS	Fluorine rubber

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

How to order



Example: PC40-100kG4wI1C

Product model: PC40, 100k: pressure range: 0~ 100kPa, G: gauge pressure, 4W: 4-wire electrical connection, I1: 1.5mA excitation, C: current compensation

Ordering Tips

1. Pressure range can be selected higher or lower than actual conditions but should be within $\pm 30\%$ 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, PC40 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 to select the option with priority.
5. The material and process for manufacturing negative pressure sensors are different from 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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