

# PC16 Piezoresistive Silicon Pressure Sensor

## Features

- With constant current and constant voltage excitation options
- Highly reliable imported pressure die
- Wide temperature compensation
- Normalized output available
- The compensating board with glue for moisture-proof protection
- Φ15.8mm standard OEM
- All 316L material
- High performance, all solid, high reliability
- 18 months warranty period

## 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
- 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.



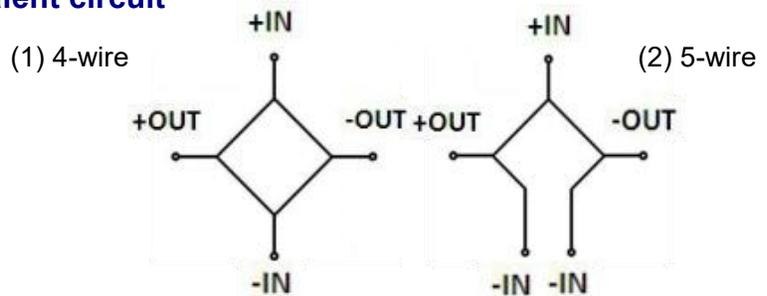
## Product overview

The PC16 piezoresistive silicon pressure sensor is the core component for manufacturing pressure sensors and pressure transmitters. As a high performance pressure sensitive component, it can easily amplify signals and be assembled into pressure transmitters with standard signal output.

PC16 packages diffused silicon pressure sensitive die to a 316L stainless steel housing. The external pressure is transmitted to the sensitive die through the stainless steel diaphragm and internally sealed silicon oil. The pressure sensitive die does not directly contact the measured medium, forming an all-solid structure of pressure measurement. This allows the product to be applied to a variety of occasions, including harsh corrosive medium environments. PC16 uses the O-ring for pressure sealing, making installation easy.

Our company can undertake special customization based on users' needs, such as fully welded structures, wide temperature compensation, high reliability, anti-shock and anti-vibration pressure sensors, especially suitable for supporting national defense weapons and equipment.

## Equivalent circuit



### 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	-100kPa~0~100kPa...16MPa
Pressure reference	Gauge pressure, Absolute pressure, Sealed gauge pressure
Excitation	1.5mA recommended for constant current
	10V recommended for constant voltage
Input impedance	Constant current: 2kΩ~5kΩ
	Constant voltage: 3kΩ~18kΩ
Electrical connection	Gold-plated Kovar pins or silicon soft wires
Compensated temp.	-10℃~70℃
Operating temp.	-40℃~125℃
Storage temp.	-40℃~125℃
Insulation resistance	≥200MΩ/250VDC
Response time	≤1ms (up to 90%FS)
Measured medium	All the liquids and gases compatible with 316L.
Mechanical vibration	20g (20~5000Hz)
Shock	100g (10ms)
Durability	1×10 <sup>6</sup> (cycles)

### Structural performance parameters

Diaphragm material	316L
Housing material	316L
Oil filling	Silicon oil
Sealing ring	Fluorine rubber

### Basic parameters

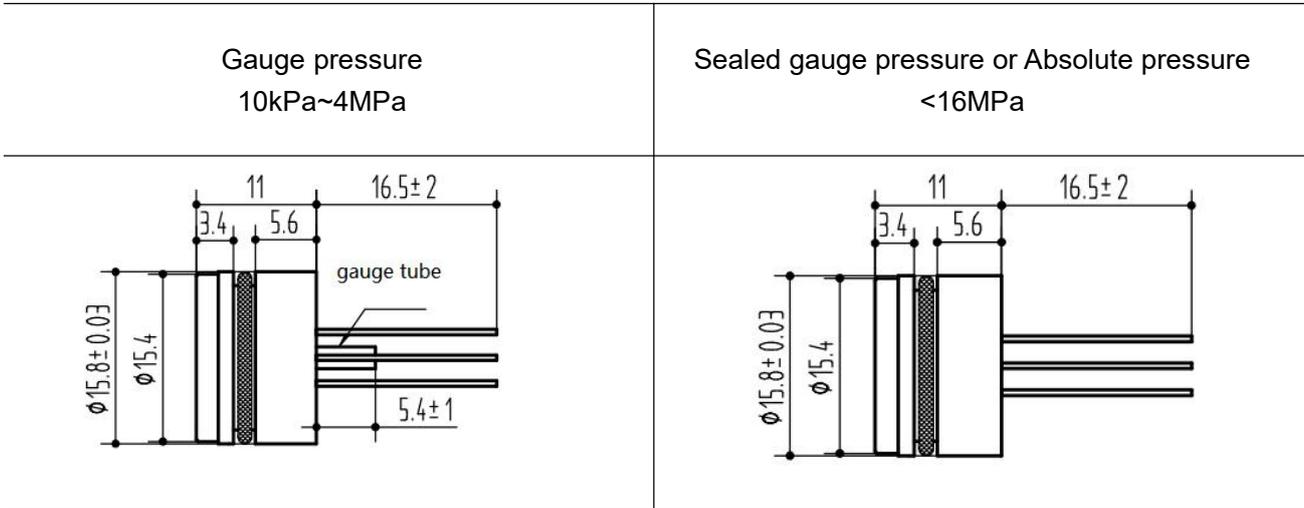
Item	Condition	Min	Typical	Max	Unit	Note
Nonlinearity		-0.3	±0.2	0.3	%FS	Note(1)
Hysteresis		-0.05	±0.03	0.05	%FS	
Repeatability		-0.05	±0.03	0.05	%FS	
Output signal under zero pressure		-2	±1	2	mV	
Output signal under full-scale span pressure	1.5mA	60	90	150	mV	
	10V	80	100	120		
Temp.effect on offset		-1.5	±0.75	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) Calculate according to BFSL least square method. Negative pressure range is calculated in segments.

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

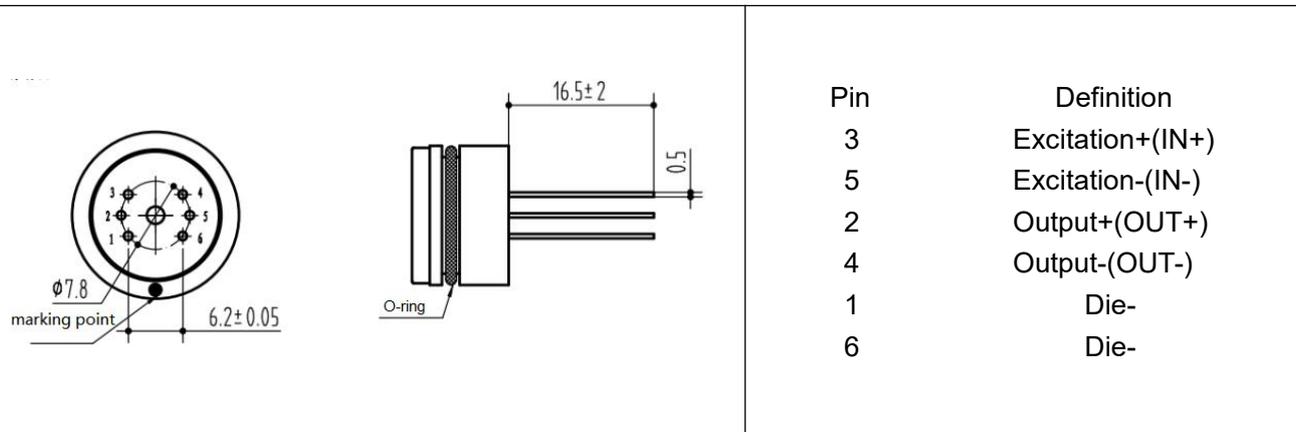
(3) After measuring pressure under the high and low temperatures, return to the room temperature.

**Structure and dimensions (in mm)**

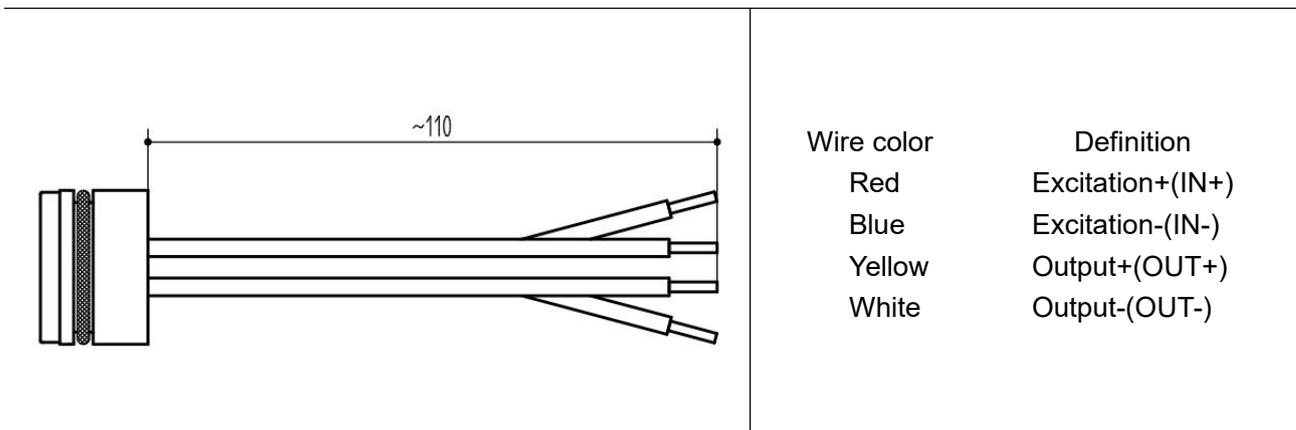


**Electrical connection (in mm)**

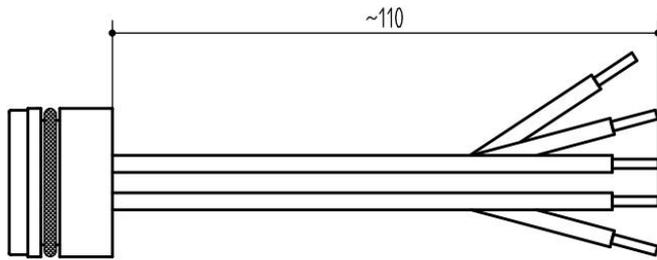
1 6-pin (6p) lead out for constant current (consult with technical dept. for constant voltage)



2 4-wire (4w)



### 3 5-wire (5w)

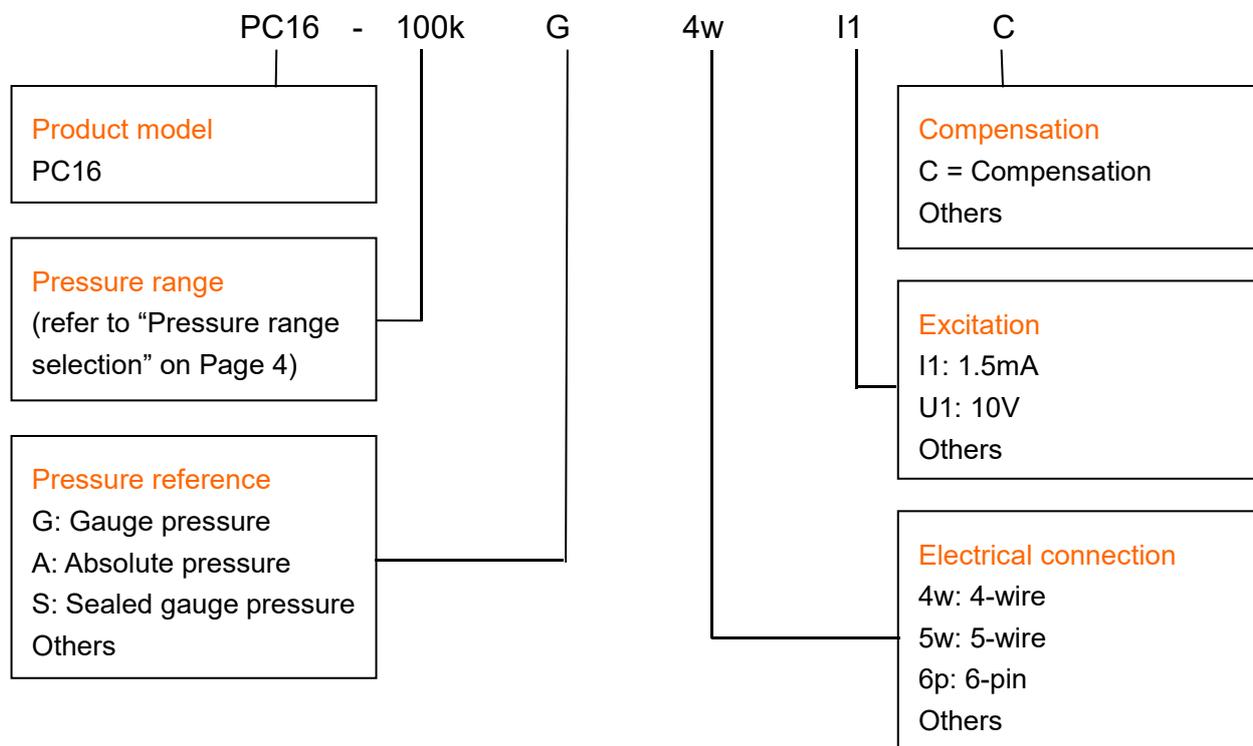


Wire color	Definition
Red	Excitation+(IN+)
Blue	Excitation-(IN-)
Green	Excitation-(IN-)
Yellow	Output+(OUT+)
White	Output-(OUT-)

Pressure range selection					
Code	Pressure reference	Pressure range	Overload pressure	Burst pressure	O-ring
100k	G, A	0~100kPa	200%FS	500%FS	Fluorine rubber
160k	G, A	0~160kPa	200%FS	500%FS	Fluorine rubber
250k	G, A	0~250kPa	200%FS	500%FS	Fluorine rubber
400k	G, A	0~400kPa	200%FS	500%FS	Fluorine rubber
600k	G, A	0~600kPa	200%FS	500%FS	Fluorine rubber
1M	G, A	0~1MPa	200%FS	500%FS	Fluorine rubber
1.6M	G, A, S	0~1.6MPa	200%FS	500%FS	Fluorine rubber
2.5M	G, A, S	0~2.5MPa	200%FS	500%FS	Fluorine rubber
4M	S	0~4MPa	200%FS	400%FS	Fluorine rubber
6M	S	0~6MPa	200%FS	400%FS	Fluorine rubber
10M	S	0~10MPa	200%FS	400%FS	Fluorine rubber
16M	S	0~16MPa	200%FS	400%FS	Fluorine rubber
NP100k	Omitted	±100kPa	300kPa	600kPa	Fluorine rubber

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

## How to order



### Example: PC16-100kG4wI1C

The product model is PC16, pressure range: 0~100kPa, gauge pressure, 4-wire lead out, 1.5mA excitation, current compensation.

### Ordering tips:

- 1 It can be selected for over range or down range, with amplitude controlled within  $\pm 30\%$  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 4MPa, 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.

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.

6 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.

## **Contact us**

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