

PC13 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
- 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

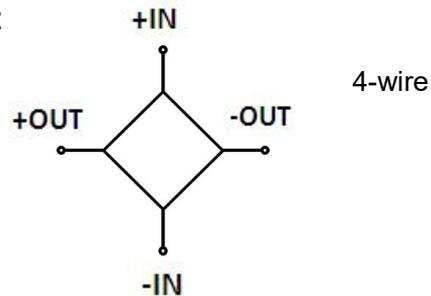
The PC13 piezoresistive silicon pressure sensor is the core component for manufacturing pressure sensors and pressure transmitters. As a high-performance pressure sensitive component, PC13 can easily amplify signals and be assembled into pressure transmitters with standard signal output.

PC13 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 the 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.

PC13 uses the O-ring for pressure sealing, making installation easy.

Our company can undertake special customization based on users' needs, such as pressure sensors with wide temperature compensation, high reliability, shock resistance, and vibration resistance, 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	6MPa...60MPa
Pressure reference	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
Compensation temp.	-10°C~70°C
Operating temp.	-40°C~125°C
Storage temp.	-40°C~125°C
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 ⁶ (cycles)

Structural performance parameters

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

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(1)
Sensitivity temp. drift		-1.5	±1.0	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 compensation temperature range, refer to 30°C for -10°C~70°C.

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

Structure and dimensions (in mm)

1. PC13 I	2. PC13 II
Sealed gauge pressure	Sealed gauge pressure
<p style="text-align: center;">O-ring Retainer ring Pin</p>	<p style="text-align: center;">O-ring Retainer ring Compensation board Pin</p>

Electrical connection

1. PC13I 5-pin lead out for constant current excitation (5p)

Please confirm with the technician for the details of constant-voltage excitation.

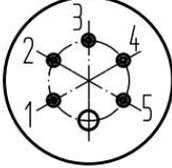
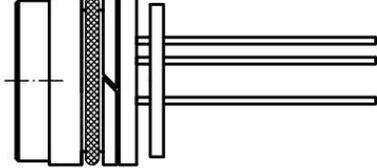
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2. PC13I 4-wire (4w)

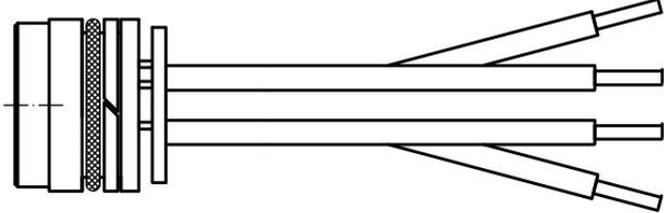
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3. PC13II 5-pin lead out with constant current excitation (5p)

Please confirm with the technician for the details of constant voltage excitation.

		Pin 3 1 or 5 2 4	Definition Excitation (IN+) Excitation (IN-) Output (OUT+) Output (OUT-)
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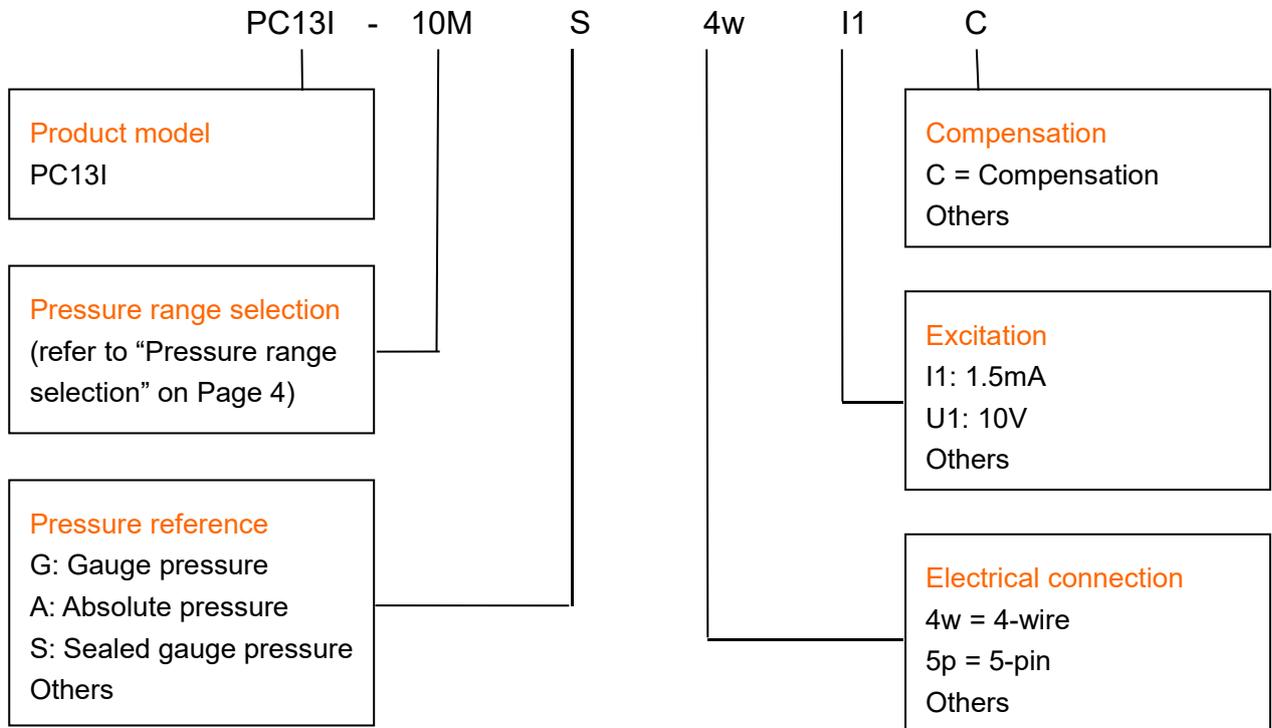
4. PC13II 4-wire (4w)

	Wire color Red Blue Yellow White	Definition Excitation (IN+) Excitation (IN-) Output (OUT+) Output (OUT-)
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Pressure range selection					
Code	Pressure reference	Pressure range	Overload pressure	Burst pressure	O-ring
6M	S	0~6MPa	200%FS	400%FS	Fluorine rubber
10M	S	0~10MPa	200%FS	400%FS	Fluorine rubber
16M	S	0~16MPa	150%FS	300%FS	Fluorine rubber
25M	S	0~25MPa	150%FS	300%FS	Fluorine rubber
40M	S	0~40MPa	150%FS	200%FS	Fluorine rubber
60M	S	0~60MPa	150%FS	200%FS	Fluorine rubber

Note: S: Sealed gauge pressure

How to order



Example: PC13I -10MS4wI1C

Product model: PC13I pressure sensor, pressure range: 0~10MPa, Sealed 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) 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.
- 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.

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