PC10HV Piezoresistive Silicon Pressure Sensor

Features

- Constant current excitation
- Highly reliable imported pressure die
- Wide temperature compensation
- Normalized output available
- The compensating board with glue for moisture-proof protection
- Φ19mm 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

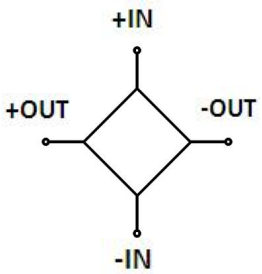
The PC10HV piezoresistive silicon pressure sensor is the core component for manufacturing pressure sensors and pressure transmitters. As a high-performance pressure sensitive component, it can amplify signals and be assembled into pressure transmitters with standard signal output.

PC10HV packages diffused silicon pressure sensitive die into the 316L stainless steel housing. 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. Therefore, the product can be applied to a variety of occasions, including harsh corrosive medium environments. PC10HV uses the O-ring for pressure sealing, making installation easy.

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

Equivalent circuit

4-wire



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	20kPa…60MPa (20kPa Min, 60MPa Max)
Pressure reference	Gauge pressure, Absolute pressure, Sealed gauge pressure
Excitation	1.5mA recommended for constant current
Input impedance	Constant current: 2kΩ~5kΩ
Electrical connection	silicon soft wire
Compensation temp.	Constant current: 0℃~60℃ (≤70kPa); -10℃~70℃ (other ranges)
Operating temp.	-40℃~120℃
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	1×10^6 (cycles)

Structural performance parameters	
Diaphragm material	316L
Housing material	316L
Oil filling	Silicon oil
Sealing ring	NBR or fluorine rubber

Basic parameters						
Item	**Condition**	**Min**	**Typical**	**Max**	**Unit**	**Note**
Nonlinearity		-0.3	±0.2	0.3	%FS	Notes(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	
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	

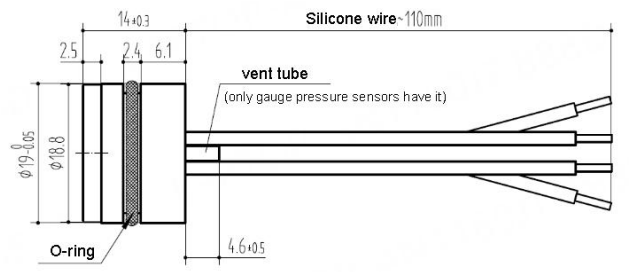
Notes: (1) Calculate according to the BFSL least square method.

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

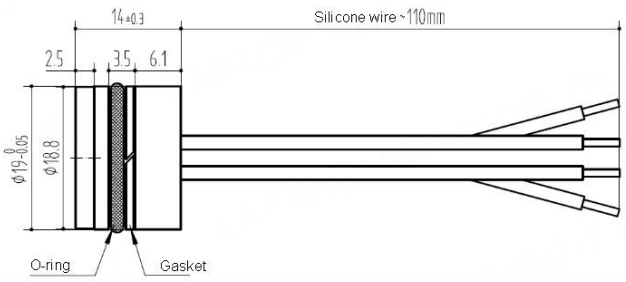
(3) After measuring pressure under the high and low temperatures, return to the room temperature.

Structure and dimension (in mm)

<16MPa

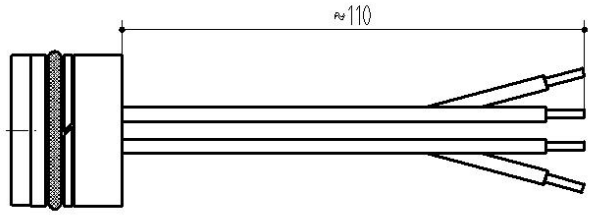


≥16MPa



Electrical connection (in mm)

4 wires (4w)



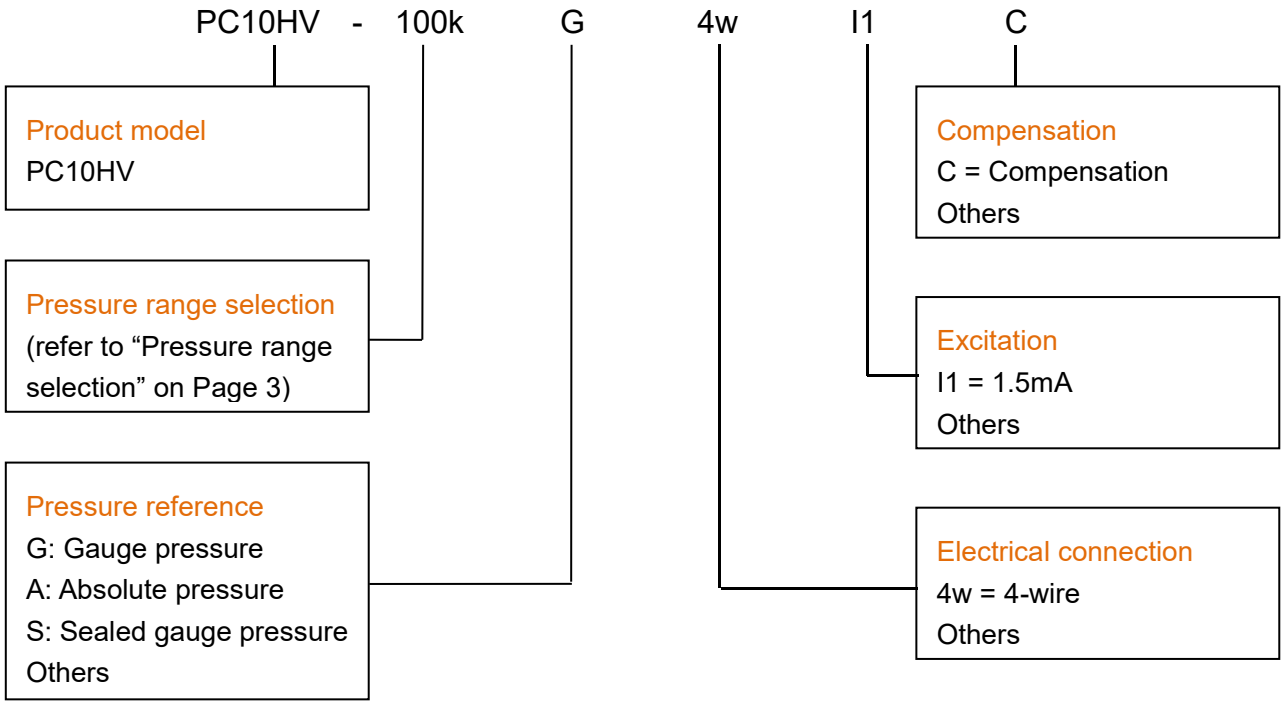
Wire color	Definition
Red	Excitation+(IN+)
Blue	Excitation-(IN-)
Yellow	Output+(OUT+)
White	Output-(OUT-)

Pressure range selection

Code	Pressure reference	Pressure range	Overload pressure	Burst pressure	O-ring
20k	G	0~20kPa	300%FS	600%FS	NBR
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
400k	G, A	0~400kPa	200%FS	500%FS	NBR
600k	G, A	0~600kPa	200%FS	500%FS	NBR
1M	G, A	0~1MPa	200%FS	500%FS	NBR
1.6M	G, A, S	0~1.6MPa	200%FS	500%FS	NBR
2.5M	G, A, 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	Fluorine rubber
10M	S	0~10MPa	200%FS	400%FS	Fluorine rubber
16M	S	0~16MPa	200%FS	400%FS	Fluorine rubber
25M	S	0~25MPa	150%FS	400%FS	Fluorine rubber
40M	S	0~40MPa	150%FS	300%FS	Fluorine rubber
60M	S	0~60MPa	150%FS	300%FS	Fluorine rubber

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

How to order



Example: PC10HV-100kG4wI1C
Product model: PC10HV, pressure range: 0~100kPa, gauge pressure, 4-wire electrical connection, 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 that is greater than the current atmospheric pressure. Negative pressure is a special case of gauge pressure. It refers to the working condition where the pressure at the work site is lower than the current atmospheric pressure.
(2) Absolute pressure is based on a vacuum.
(3) As for sealed gauge pressure, PC10HV uses the absolute pressure die for the gauge pressure product based on the atmospheric pressure of the production site. 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 durability 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 different from those of positive pressure sensors. Negative pressure sensors cannot be replaced by gauge pressure sensors.

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

Contact us

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