PC10Q Silicon Piezoresistive Pressure Sensor

Features

- Constant current excitation and constant voltage excitation
- Highly reliable imported pressure die
- Wide temperature range compensation
- Normalized output is optional
- The compensated board with glue for moisture-proof protection
- Standard Φ19mm, 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 system

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

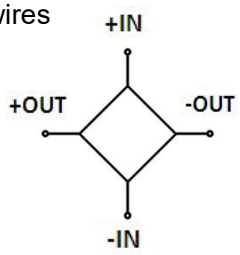
The PC10Q silicon piezoresistive pressure sensor is the core component for manufacturing pressure transmitters. As a high-performance pressure sensitive component, PC10Q can amplify signals and be assembled into pressure transmitters with standard signal output.

PC10Q pressure sensor packages diffused silicon pressure sensitive die to the stainless steel 316L 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 a diaphragm structure of pressure measurement. Therefore, the sensor can be applied to a variety of occasions, including harsh corrosive medium environments. PC10Q adopts O-ring pressure sealing for easy installation.

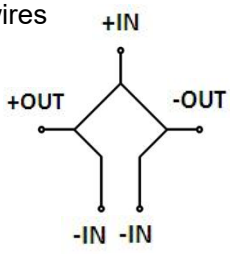
Our company offers special customization as users' needs, such as pressure sensors with a fully-welded structure, wide temperature range compensation, high-reliability, anti-shock and anti-vibration pressure sensors.

Equivalent circuit

(1) 4 wires



(2) 5 wires



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~0~10kPa…40MPa
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 wires
Compensated temp. range	0ºC ~ 60ºC (≤70kPa); -10ºC ~ 70ºC (other ranges)
Operating temp.	-40ºC ~ 120ºC
Storage temp.	-40ºC ~ 125ºC
Insulation resistance	≥200MΩ/250VDC
Response time	≤1ms (up to 90%F.S.)
Measured medium	All the liquids and gases which are compatible with SS316L.
Mechanical vibration	20g (20~5000Hz)
Shock resistance	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		-0.3	±0.2	0.3	%F.S.	Notes(1) (2)
Hysteresis		-0.05	±0.03	0.05	%F.S.	
Repeatability		-0.05	±0.03	0.05	%F.S.	
Zero output		-2	±1	2	mV	
Full scale output	1.5mA (10kPa) 1.5mA (other ranges) 10V (10kPa) 10V (other ranges)	30 60 60 98	90 100	150 102	mV	
Zero temp. drift	10kPa (other ranges)	-2 -1.5	±1.5 ±0.75	2 1.5	%F.S.	Note(3)
Sensitivity temp. drift		-1.5	±0.75	1.5	%F.S.	Note(3)
Thermal hysteresis		-0.075	±0.05	0.075	%F.S.	Note(4)
Long-term stability		-0.3	±0.2	0.3	%F.S./Year	

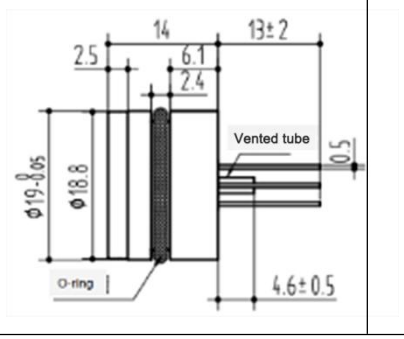
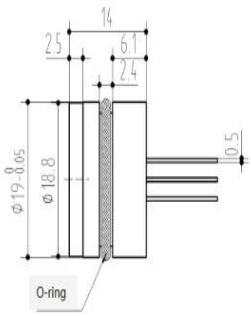
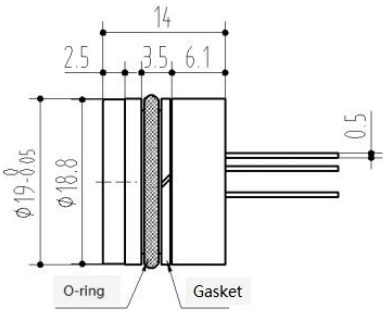
Notes: (1) Calculate according to the BFSL least square method. Negative pressure range is calculated in segments.

(2) 100MPa non-linearity: ±0.55%F.S.

(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 middle point temperature.

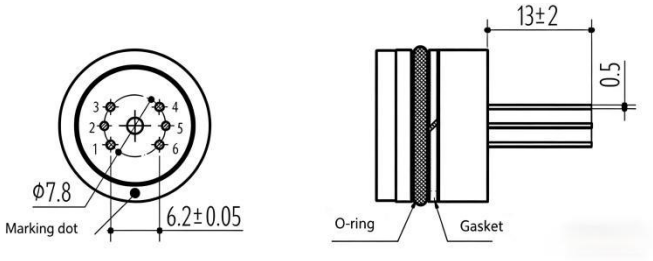
Structure and dimension (in mm)

Gauge pressure 10kPa~4MPa	Sealed gauge pressure or absolute pressure ＜16MPa	Sealed gauge pressure ≥16MPa
		

Electrical connection (in mm)

1.Pin connection: 6 pins (6p) for constant current excitation

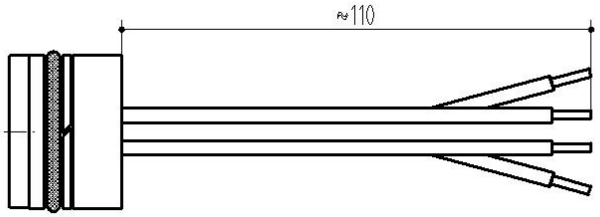
Please confirm with the technician for the details of constant voltage excitation.



Marking dot: A reference mark for indicating the pin's position

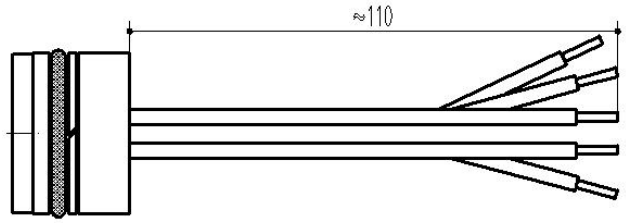
Pin	Definition
3	Excitation+(IN+)
5	Excitation-(IN-)
2	Output+(OUT+)
4	Output-(OUT-)
1	Die-
6	Die-

2. Wire connection: 4 wires (4w) for constant current excitation and constant voltage excitation



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

3. Wire connection: 5 wires (5w) for constant current excitation and constant voltage excitation



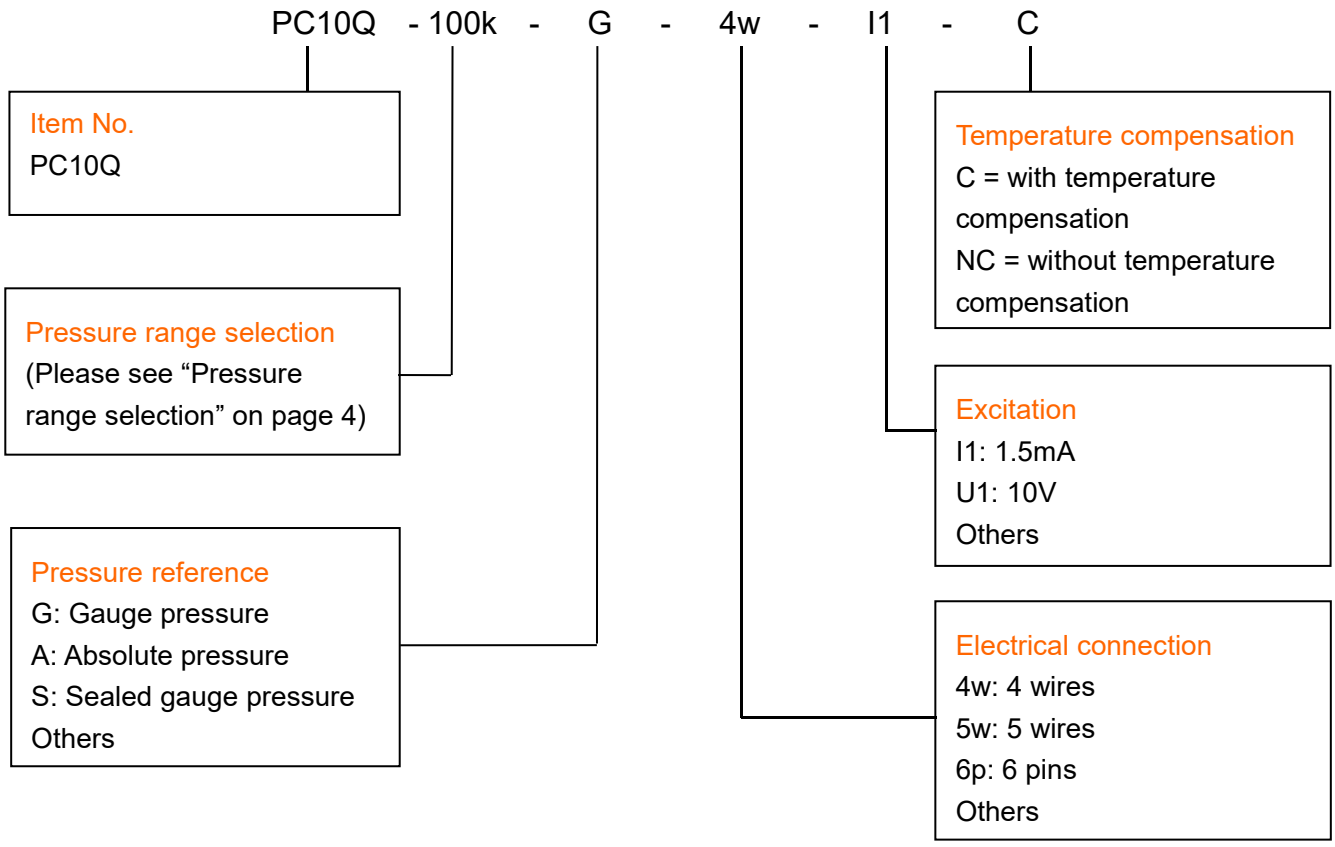
Wire color	Definition
Red	Excitation+(IN+)
Blue	Excitation-(IN-)
Green	Excitation-(IN-)
Yellow	Output+(OUT+)
White	Output-(OUT-)

Pressure range selection

Code	Pressure reference	Pressure range	Overload pressure	Burst pressure	O-ring
10k	G	0～10kPa	300%FS	600%FS	NBR
20k	G	0～20kPa	300%FS	600%FS	NBR
35k	G、A	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
160k	G、A	0～160kPa	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	FKM
10M	S	0～10MPa	200%FS	400%FS	FKM
16M	S	0～16MPa	200%FS	400%FS	FKM
25M	S	0～25MPa	150%FS	400%FS	FKM
40M	S	0～40MPa	150%FS	300%FS	FKM
NP100k	Omitted	±100kPa	300kPa	600kPa	NBR

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

Ordering information



Example of ordering information: PC10Q - 100k - G - 4w - I1 - C

Product model: PC10Q, 100k: pressure range 100kPa, G: gauge pressure, 4w: 4 wires, I1: 1.5mA, C: with temperature 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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