PCM16 Silicon Piezoresistive Pressure Sensor

Features

- Constant current 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
- 316L material for all metal
- 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 systems

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.

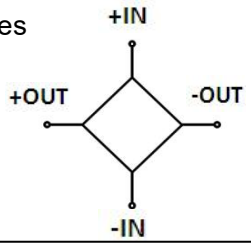


Product overview

The PCM16 silicon piezoresistive pressure sensor is the key component of pressure sensors and transmitters. This high-performance sensing element can be easily amplified and assembled into standard output transmitters. Encapsulated with a diffused silicon die in 316L stainless steel housing, it transmits pressure via diaphragm and sealed silicon oil. The die is isolated from process media with an all-solid-state structure, suitable for harsh corrosive conditions. It adopts O-ring sealing for easy installation. Customized services are available, including diaphragm sensing structure, wide temperature compensation, high reliability, shock and vibration resistant pressure sensors.

Equivalent circuit

4 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	0~ 40kPa…10MPa
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
Compensated temp. range	0ºC ~ 60ºC (≤70kPa); -10ºC ~ 70ºC (other ranges)
Operating temp.	-40ºC ~ 120ºC
Storage temp.	-40ºC ~ 120ºC
Insulation resistance	≥200MΩ/250VDC
Response time	≤1ms (up to 90%F.S.)
Measured medium	All the liquids and gases which are compatible with 316L.
Mechanical vibration	20g (20~5000Hz)
Shock	100g /10ms
Service life	1×10^6(cycles)
Structural performance parameters	
Diaphragm material	316L
Housing material	316L
Oil filling	Silicon oil
Sealing ring material	NBR or FKM

Basic parameters

Item	Condition	Min	Typical	Max	Unit	Note
Non-linearity			0.2	0.3	%F.S.	Notes(1)
Hysteresis			0.03	0.05	%F.S.	
Repeatability			0.03	0.05	%F.S.	
Zero output		-2	± 1	2	mV	
Full scale output	1.5mA	60	90	150	mV	Notes(2）
Zero temp. drift			1	1.5	%F.S.	Notes(3）
Sensitivity temp. drift			1	1.5	%F.S.	Notes(3)
Thermal hysteresis			0.075	0.1	%F.S.	Notes(4)
Long-term stability			0.2	0.3	%F.S./Year	

Notes:

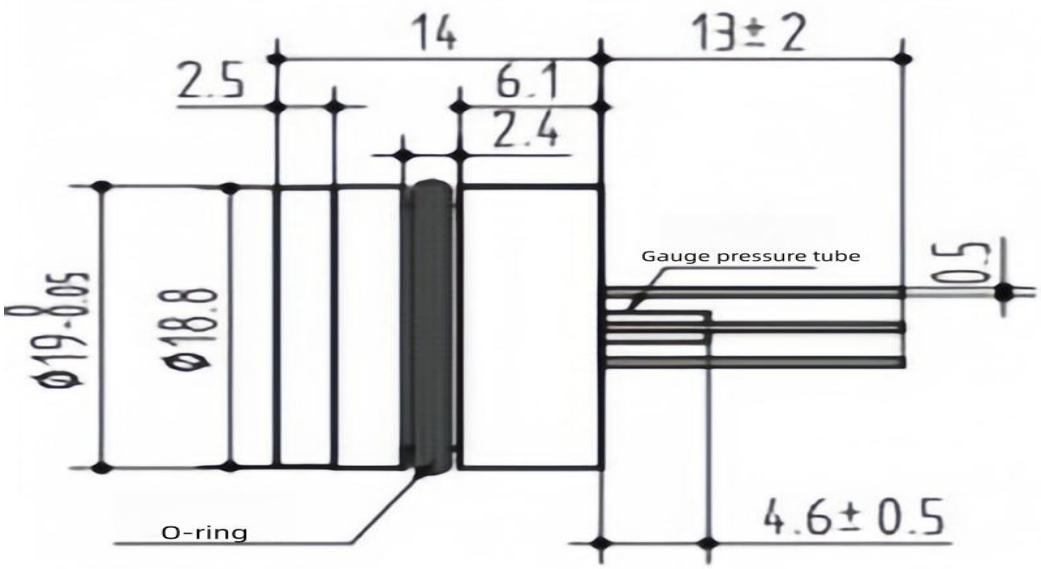
(1) Calculate according to the BFSL least square method; negative pressure range adopts sectional calculation.

(2) Under 1.5mA excitation, the output varies with pressure range: low-range outputs are relatively low, while high-range outputs are relatively high. Customers requiring detailed output ranges shall inquire with our company before ordering.

(3) Within the compensated temperature range 0ºC ~ 60ºC and -10ºC ~ 70ºC, the temperature is 30ºC for reference.

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

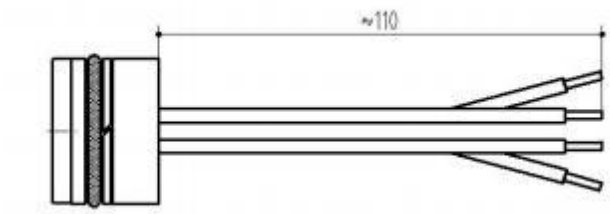
Structure & dimension (in mm)



Electrical connection (in mm)

1 Pin connection: 4 pins for constant current excitation

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



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

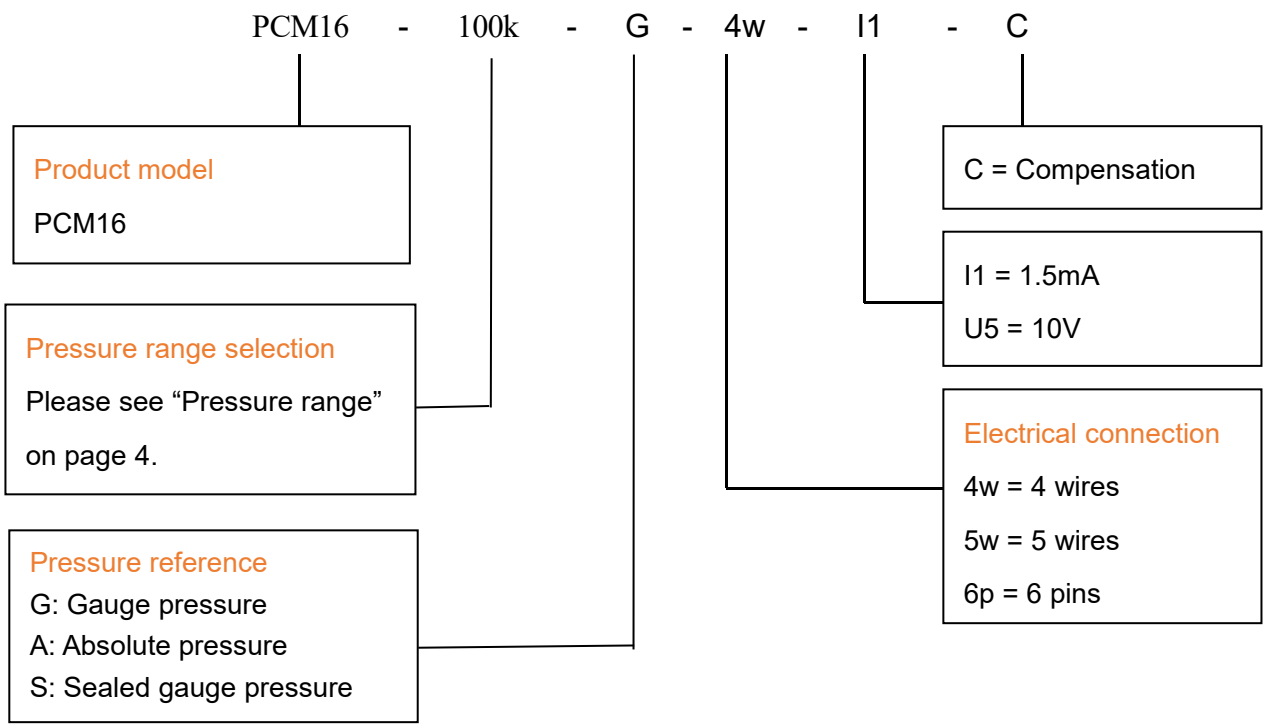
Pressure range selection

Code	Pressure reference	Pressure range	Overload pressure	Burst pressure	O-ring
35k	G	0～35kPa	300%F.S.	600%F.S.	NBR
70k	G	0～70kPa	300%F.S.	600%F.S.	NBR
100k	G、A	0～100kPa	200%F.S.	500%F.S.	NBR
250k	G、A	0～250kPa	200%F.S.	500%F.S.	NBR
500k	G、A	0～400kPa	200%F.S.	500%F.S.	NBR
1M	G、A	0～1MPa	200%F.S.	500%F.S.	NBR
1.6M	G、A、S	0～1.6MPa	200%F.S.	500%F.S.	NBR
2.5M	G、A、S	0～2.5MPa	200%F.S.	500%F.S.	NBR
4M	S	0～4MPa	200%F.S.	400%F.S.	NBR

6M	S	0～6MPa	200％F.S.	400％F.S.	NBR
10M	S	0～10MPa	200％F.S.	400％F.S.	NBR

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

Ordering information



Example of ordering information: PCM16 - 100k - G - 4w - I1 - C
Product model: PCM16, 100k: pressure range is 0~100kPa, G: gauge pressure, 4w: electrical connection is 4 wires, I1: 1.5mA excitation, 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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