CYX20

1 Summary

CYX20 series differential pressure sensor is a differential pressure sensitive device isolated by stainless steel double corrugated diaphragm. The accurate measurement is achieved by transmitting through the isolation diaphragm and filled silicone oil to the silicon pressure-sensitive element. The core adopts piezoresistive chip with international advanced silicon pressure chips with high stability and high precision, and adopts the sintering base with stress optimization design. The sensor is produced by the following processes: patching, gold wire bonding, diaphragm welding, high vacuum oil injection, pressure cycle stress relief, high temperature aging, temperature compensation, etc. The shape, size and sealing mode of the general products are consistent with the international mainstream products of the same kind, and have good interchangeability. They are widely used for differential pressure and liquid level measurement of compatible media with 316L stainless steel, NBR or FKM.

2 Product features

- measurement range: 0 ~ 10kPa…3.5MPa
- constant current / voltage supply
- isolated structure, suitable for multiple fluid media
- all 316L stainless steel
- static pressure 10MPa
- 1.5 times overvoltage of full scale

3 Application

- industrial process control
- gas and liquid pressure measurement
- differential pressure detection
- liquid level measurement of pressure vessel
- pressure detection and calibration instrument
- flow meter

4 Technical indicators

4.1 Electrical performance

- power supply: ≤ 3.0mA; DC ≤ 10V DC
- electrical connection: 0.2mm² four color 100mm silicon rubber flexible wire
- common-mode voltage output: 50% of current type input (typical value), 40% of voltage type input (typical value)
- input impedance: 2.7kΩ ～ 5kΩ
- output impedance: 3.0kΩ ～ 6kΩ
- response time (10% - 90%): < 1ms
- insulation resistance: 500MΩ / 100V DC
- allowable overvoltage: 1.5 times of full scale

4.2 Structure performance

- diaphragm material: stainless steel 316L
- shell material: stainless steel 316L
- pin lead: silicone rubber flexible wire
- sealing ring: NBR, FKM (optional)
- net weight: about 38g

4.3 Environment condition

- vibration: no change at 10gRMS, (20-2000) Hz
- constant acceleration: 100g, 11ms
- media compatibility: liquid or gas compatible with 316L and NBR (FKM optional)

4.4 Reference conditions

- medium temperature: (25 ± 3) ℃
- ambient temperature: (25 ± 3) ℃
- humidity: (50% ± 10%) RH
- ambient pressure: (86-106) kPa
- power supply: (1.5 ± 0.0015) mA DC

4.5 Standard range sensitivity output and optional pressure form

Range	Full scale output (mV)	Pressure form		Range	Full scale output (mV)	Pressure form
0～10kPa	(30～120)±20	D		0～400kPa	(40～150)±20	D
0～35kPa	(40～120)±20	D		0～1.0MPa	(55～145)±20	D
0～70kPa	(20～140)±20	D		0～2.0MPa	(50～160)±20	D
0～100kPa	(50～145)±20	D		0～3.5MPa	(60～150)±20	D
0～200kPa	(30～125)±20	D				

4.6 Basic parameters

Parameters	Typical value	Max value	Unit
Zero output	± 1	± 2	mV
Nonlinearity	0.2	0.5	%FS
Hysteresis	0.05	0.08	%FS
Repeatability	0.05	0.08	%FS
Input / output impedance	2.6	5.0	kΩ
Zero temperature drift (note 1)	±0.4	±1.0	%FS, @25℃
Sensitivity temperature drift (note 2)	±0.4	±1.0	%FS, @25℃
Long-term stability	0.2	0.3	%FS / year
Excitation current	1.5 (the maximum input voltage can be 10V)		mA
Insulation resistance	500（100VDC）		MΩ
Compensation temperature (note 3)	0～50; -10～70		℃
Working temperature	-40～+125		℃
Storage temperature	-40～+125		℃
Response time	≤1		ms
Housing and diaphragm material	stainless steel 316L		
O-ring	FKM, NBR, silicone rubber		
Measuring medium	Fluids compatible with 316L, NBR or FKM or silicone		
Life (25 ℃)	＞ 1 × 10^8 pressure cycle (80% FS)		times
Filling medium	silicone oil		
Sealing ring	Φ 16 × 1.8mm (NBR or FKM (note 4))		

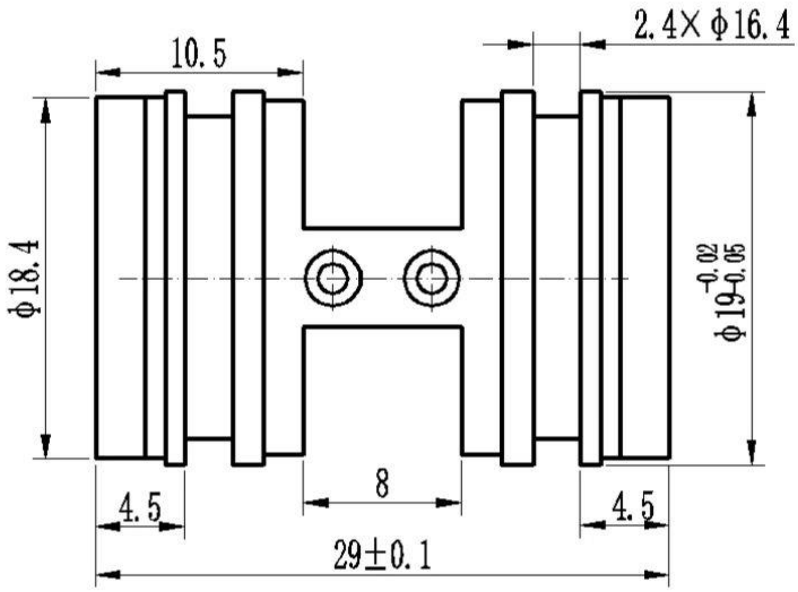
Note 1 & 2. 0-10kPa zero temperature drift and sensitivity temperature drift: typical value is 0.5% FS @ 25 ℃, maximum value is 1.2% FS @ 25 ℃.

Note 3. compensation temperature 0~ 50 ℃ for ranges ≤200kPa; - 10℃~ 70 ℃.

Note 4. temperature resistance range of viton seal ring is - 20 ℃ ~ 200 ℃, low temperature performance is poor, When the temperature is lower than - 20 ℃, please verify before using.

5 Model structure selection

5.1 Outline drawing



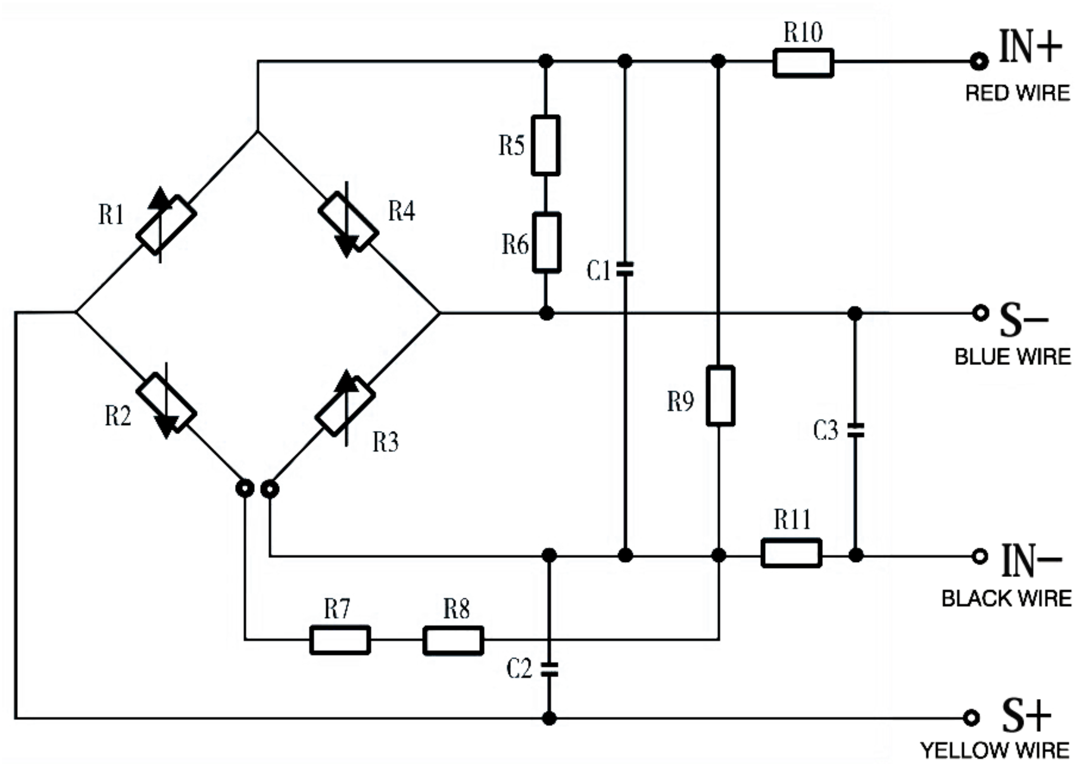
5.2 Selection Guide

CYX 20 - 600 D f

- f — Process identification*
- D — Pressure form
- 600 — Range (600 for 600kPa, 1M for 1MPa)
- 20 — Series No.
- CYX — Pressure sensor

*Process identification: f for general process

6 Schematic diagram and wiring mode



IN + (red wire) - power supply positive IN - (black wire) - power supply negative
S + (yellow wire) - output positive S - (blue wire) - output negative

7 Application Tips

- The leading line end of the sensor is a high-pressure end, and the other end is a low pressure end. The "H" and "L" marks on the sensor can also be used to identify the high- and low-pressure ends. During operation, the pressure added to the high-pressure end should not be less than the pressure added to the low-pressure end.
- Housing: the inlet end of assembly cavity should be designed with a conical angle, which is easy to assemble and prevent the right angle from scratching the sealing ring. The "floating" sealing structure of O-ring on the side wall is recommended for sealing the differential pressure sensor, which can avoid the front end being compressed and the stability being affected.

- Pay attention to protect the front and rear diaphragm and middle compensation circuit board, so as not to affect the performance or cause damage to the pressure sensor.
- During assembly, pay attention to the tolerance fit between the pressure sensor size and the inner shell of the transmitter. It is recommended that the cavity be processed according to + 0.02 - + 0.05 of the pressure sensor diameter to achieve the required air tightness.
- Avoid falling, crashing, etc., which will affect the stability of the product.
- In case of any change of pin lead, the label with the pressure sensor shall prevail.