TIANSHUI HUATIAN SENSOR

CYX19/32 SERIES OIL INJECTION CORE PRESSURE SENSOR

1 Summary

CYX 19/32 series oil injection core pressure sensor adopts the internationally advanced high stability and high precision silicon pressure chip, and adopts the sintering seat with stress optimization design, which is produced by the processes of chip mounting, gold wire bonding, diaphragm welding, high vacuum oil injection, pressure cycle stress relief, high temperature aging, temperature compensation, etc. With more than 30 years of development, production experience and technological innovation, the products have excellent stability and performance, and are widely recognized by users.

No.14 Shuangqiao Rd, Qinzhou Dist, Tianshui, Gansu Prov, China +86-0938-8631926 tshtcgq@126.com

1.1 General CYX19 pressure sensor

The shape, assembly size and sealing method of the general CYX19 are consistent with the same kind of international mainstream products, which gives CYX19 good interchangeability. It is widely used in the pressure detection of the medium compatible with SS316L, NBR or Viton.

1.2 CYX19 pressure sensor with chloride ion corrosion resistance

CYX19Ti pressure sensor shares the same shape, assembly dimension and sealing form as the general CYX19. Structure uses titanium alloy: TC4 with high strength and good corrosion resistance is selected as the shell, TA1 is selected as the diaphragm, which is more suitable for the medium with strong corrosion of chloride ions such as seawater. Working in humid atmosphere and sea water medium, its corrosion resistance is far superior to that of stainless steel products. It has strong resistance to pitting, acid and stress corrosion, and excellent corrosion resistance to organic substances of alkali / chloride /chlorine, nitric acid, sulfuric acid, etc. Measurement range is -100kPa ~ 0 ~ 10kPa…100MPa。

1.3 Negative pressure measuring CYX series (model + Y)

Through the production of special negative pressure technology, the general pressure sensor and other models can reliably detect pressure below atmospheric pressure, and the range is between -100kPa ~ 3MPa.

2 Product features

- measurement range: 0kPa ~ 10kPa…100MPa
- 3 pressure forms: gauge pressure (G), absolute pressure (A), seal gauge pressure (S)
- constant current / voltage supply
- isolated structure, suitable for multiple fluid media
- Φ 19mm standard OEM pressure oil injection core
- all 316L stainless steel
- titanium structure optional, tantalum diaphragm customized

3 Application

- industrial process control
- liquid level measurement
- gas and liquid pressure measurement
- pressure detection and calibration instrument
- pressure switch and hydraulic system
- well monitoring
- refrigeration equipment and air conditioning system
- fire Internet of things

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 / titanium TA1 (CYX19Ti)
- shell material: stainless steel 316L / titanium TC4 (CYX19Ti)
- pressure lead-in tube material: stainless steel 316L
- pin lead: gilded Kovar
- sealing ring: NBR, Viton (optional)
- net weight: about 23g (general, CYX19Ti)

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 (Viton 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	G		0～3.5MPa	(60～150)±20	G/s/A
0～35kPa	(40～120)±20	G/A		0～6MPa	(60～130)±20	S
0～70kPa	(20～140)±20	G/A		0～10MPa	(40～110)±20	S
0～100kPa	(50～145)±20	G/A		0～25MPa	(30～100)±20	S
0～200kPa	(30～125)±20	G/A		0～40MPa	(35～105)±20	S
0～400kPa	(40～150)±20	G/A		0～60MPa	(70～165)±20	S
0～1.0MPa	(55～145)±20	G/A		0～100MPa	(55～190)±20	S
0～2.0MPa	(50～160)±20	G/A				

4.6 Basic parameters

Parameters	Typical value	Max value	Unit
Full scale output	100	250	mV
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		℃
Operating temperature	-40~+125		℃
Storage temperature	-40~+125		
Response time	≤1		
Housing and diaphragm material	stainless steel 316L		
O-ring	viton, nitrile rubber, silicone rubber		
Measuring medium	Fluid compatible with 316L, NBR, viton, silicone		
Life (25 ℃)	＞ 1 × 108 pressure cycle (80% FS)		times
Filling medium	silicone oil		
Sealing ring	Φ 16 × 1.8mm (nitrile or fluorinated rubber (note 4))		

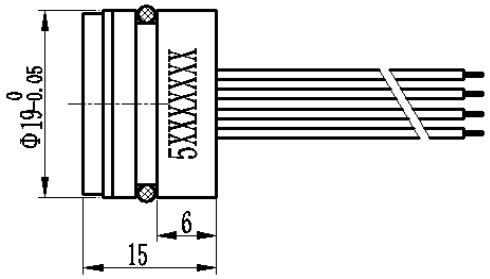
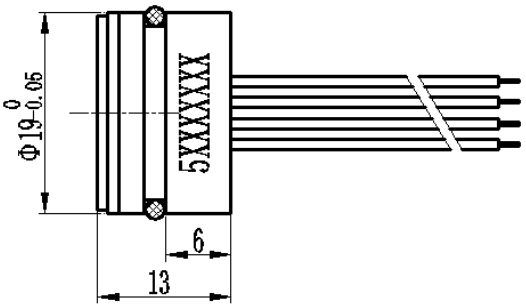
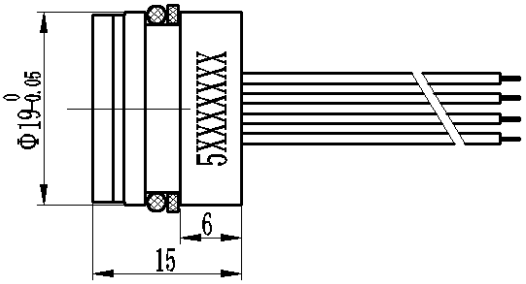
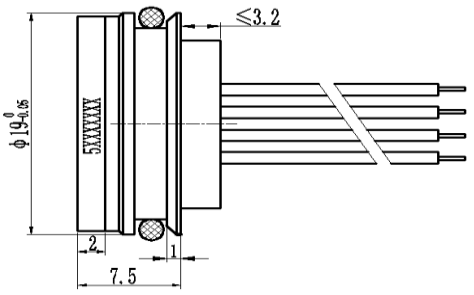
Note 1 & 2. 0-10kPa zero temperature drift and sensitivity temperature drift: typical value is 0.5% FS @ 25 ℃, maximum value is 1.2% FS @ 25 ℃.

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 Model selection

Series	Range	Model	Outline drawing
CYX19	-100kPa～10MPa	CYX1901	
		CYX1901P	
	25MPa～100MPa	CYX1902	
CYX32	-100kPa～3.5MPa	CYX3201	

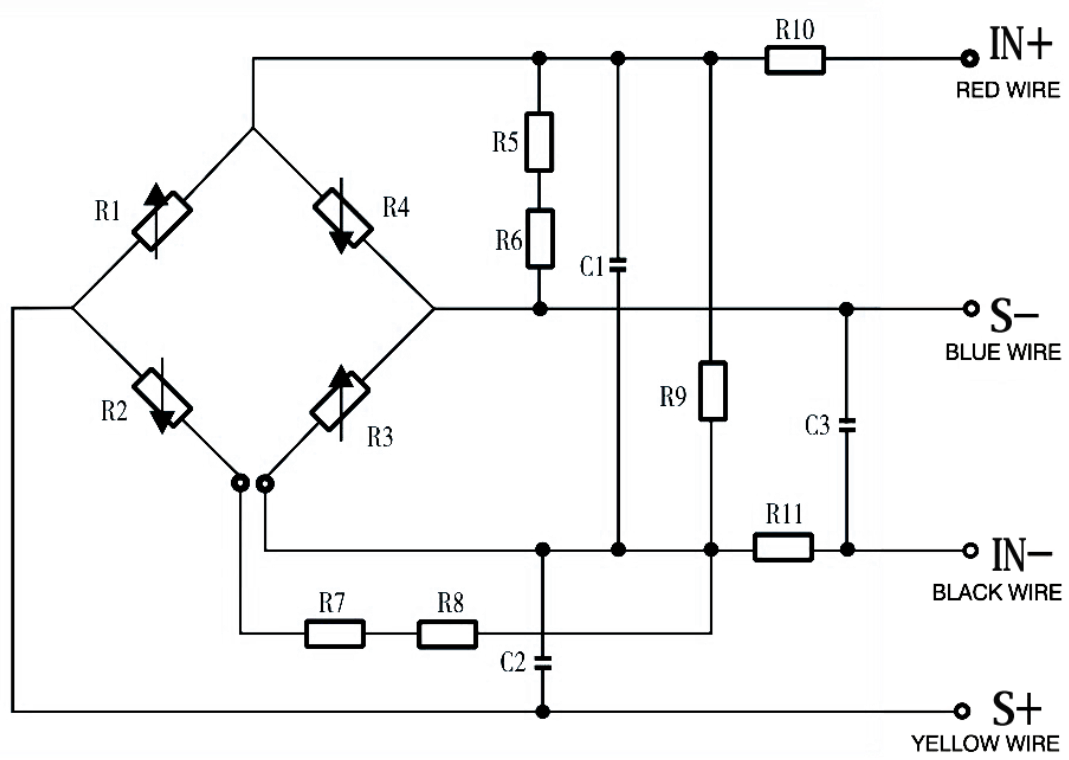
5.2 Selection Guide

CYX X_1X_2 X_3 - 035 G Y

- Y: Process identification*
- G: Pressure form (G, A, S)
- 035: Range (035 for 35kPa, 10M for 10MPa)
- X_3: General type: empty, voltage type 0.5-4.5V: V, current type 4-20mA: I, flush diaphragm type: P, voltage output flush diaphragm type: VP, current output flush diaphragm type: IP
- X_1X_2: series number, two digits for standard series (such as 19, 12), four digits for customized series (such as 2210)
- CYX: Pressure sensor

*Process identification: f for general process, Y for negative pressure process.

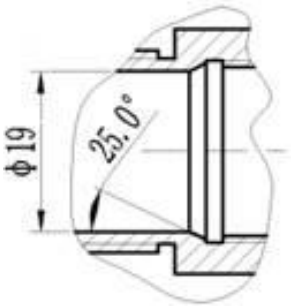
6 Schematic diagram and wiring mode



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 "floating" sealing structure of O-ring on the side wall is recommended for sealing the pressure sensor, which can avoid the front end being compressed and the stability being affected.
- Pay attention to protect the front diaphragm and the compensation circuit board at the rear end, so as not to affect the performance or cause damage to the pressure sensor.
- The shell cavity shall be designed with tapered angle as shown in the figure, which is easy for assembly and can prevent the seal ring from being scratched by right angle.
- 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.



- During assembly, it is required to place vertically and press down evenly to prevent the shell from jamming or damaging the compensation plate.
- Do not press the metal diaphragm with hands or hard objects to avoid damaging the pressure sensor due to chip deformation or perforation.
- When wiring, the pins should not be cut too short, the length is generally no less than 5mm, and the welding time is no more than 5s.
- The pressure lead-in tube at the back of G type pressure sensor shall be connected with the atmosphere; water, steam or corrosive medium shall not enter the reference cavity at the back of the sensor body.
- 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.