



TIANSHUI HUATIAN SENSOR

CYX12 SERIES PRESSURE SENSOR



CYX12

1 Summary

CYX12 series pressure sensor 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: chip mounting, gold wire bonding, diaphragm welding, high vacuum oil injection, pressure cycle stress relief, high temperature aging, temperature compensation, etc. The product has excellent stability and performance.

The miniaturized outline dimension is designed to meet the small size of the user's whole machine. They are widely used for pressure measurement of compatible media with ss316L, NBR and FKM.



2 Product features

- measurement range: -100kPa~0kPa ~ 200kPa...100MPa
- pressure forms: gauge pressure (G), absolute pressure (A) and seal gauge pressure (S)
- constant current power supply
- isolated structure, suitable for multiple fluid media
- $\Phi 12.6\text{mm}$ pressure diameter
- all 316L stainless steel
- tantalum diaphragm can be customized

3 Applications

- industrial process control
- gas and liquid pressure measurement
- pressure switch and hydraulic system
- well detection
- pressure detection and calibration instrument
- internet of things for fire protection

4 Technical indicators

4.1 Electrical performance

- power supply: $\leq 3.0\text{mA}$
- electrical connection: 0.2mm^2 four color 100mm silicon rubber flexible wire
- common-mode voltage output: 50% of current type input (typical value)
- input impedance: $2.7\text{k}\Omega \sim 5\text{k}\Omega$
- output impedance: $3.0\text{k}\Omega \sim 6\text{k}\Omega$
- response time (10% - 90%): $< 1\text{ms}$
- insulation resistance: $500\text{M}\Omega / 100\text{V DC}$
- allowable overvoltage: 1.5 times of full scale



4.2 Structure performance

- diaphragm material: stainless steel 316L
- shell material: stainless steel 316L
- pin lead: gold-plated Kovar
- sealing ring: NBR, FKM (optional)
- net weight: about 10g

4.3 Environment conditions

- vibration: no change at 10gRMS, (20-2000) Hz
- constant acceleration: 100g, 11ms
- media compatibility: liquid or gas compatible with ss316L and NBR (FKM optional)

4.4 Reference conditions

- medium temperature: $(25 \pm 3) ^\circ\text{C}$
- ambient temperature: $(25 \pm 3) ^\circ\text{C}$
- humidity: $(50\% \pm 10\%) \text{ RH}$
- ambient pressure: (86-106) kPa
- power supply: $(1.5 \pm 0.0015) \text{ mA DC}$

4.5 Standard range sensitivity output and optional pressure form

Range	Full scale output (mV)	Typical value	Pressure form		Range	Full scale output (mV)	Typical value	Pressure form
0~200kPa	60~90	70	G/A		0~7.0MPa	120~150	135	S/A
	90~120	100	G/A		0~10MPa	80~100	90	S/A
0~600kPa	90~135	110	G/A			180~230	200	S/A
	90~120	100	G/A		0~25MPa	140~170	150	S/A
0~1.0MPa	80~120	100	G/A		0~40MPa	75~100	80	S/A
0~1.6MPa	80~110	150	S			230~280	250	S/A
0~1.6MPa	125~185	150	G/A		0~60MPa	95~160	130	S/A
0~2.0MPa	100~125	110	G/A		0~100MPa	80~100	90	S/A
0~3.5MPa	100~120	110	G/S/A			100~150	120	S/A



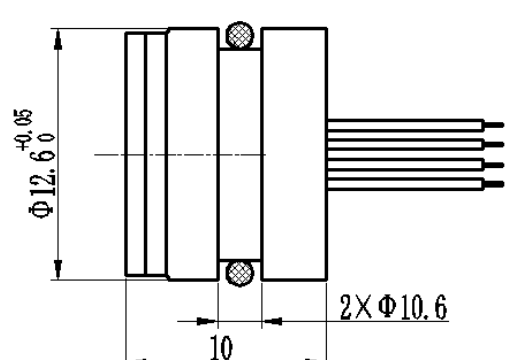
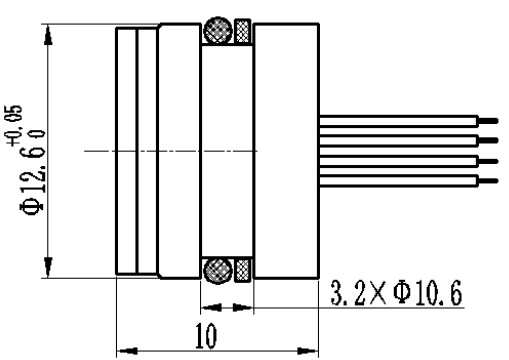
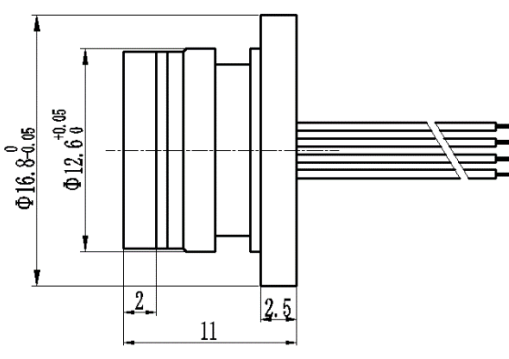
4.6 Basic parameters

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	±0.4	±1.0	%FS, @25°C
Sensitivity temperature drift	±0.4	±1.0	%FS, @25°C
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	-10~+70		°C
Working temperature	-40~+125		°C
Storage temperature	-40~+125		°C
Response time	≤1		ms
Housing and diaphragm material	stainless steel 316L		
O-ring	FKM, NBR, silicone rubber		
Measuring medium	fluids compatible with 316L, NBR, FKM and silicone		
Life (25 °C)	> 1 × 10 ⁸ pressure cycle (80% FS)		times
Filling medium	silicone oil		
Sealing ring	Φ 10 × 1.3mm (NBR or FKM (note 1))		

Note 1. temperature resistance range of viton seal ring is - 20 °C ~ +200 °C, low temperature performance is poor, when the temperature is lower than - 20 °C, please verify before using.

5 Model selection

5.1 Model selection and outline drawing

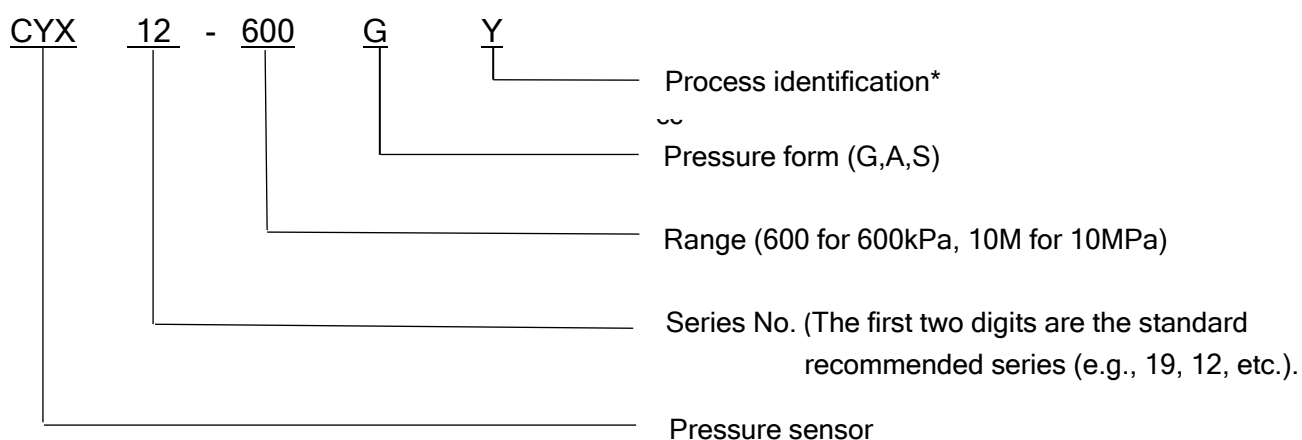
Series	Measuring Range	Model	Outline Drawing
CYX12	-100kPa~0kPa~10MPa	CYX1201	
	25MPa~100MPa	CYX1202	
	-100kPa~20MPa	CYX12A	



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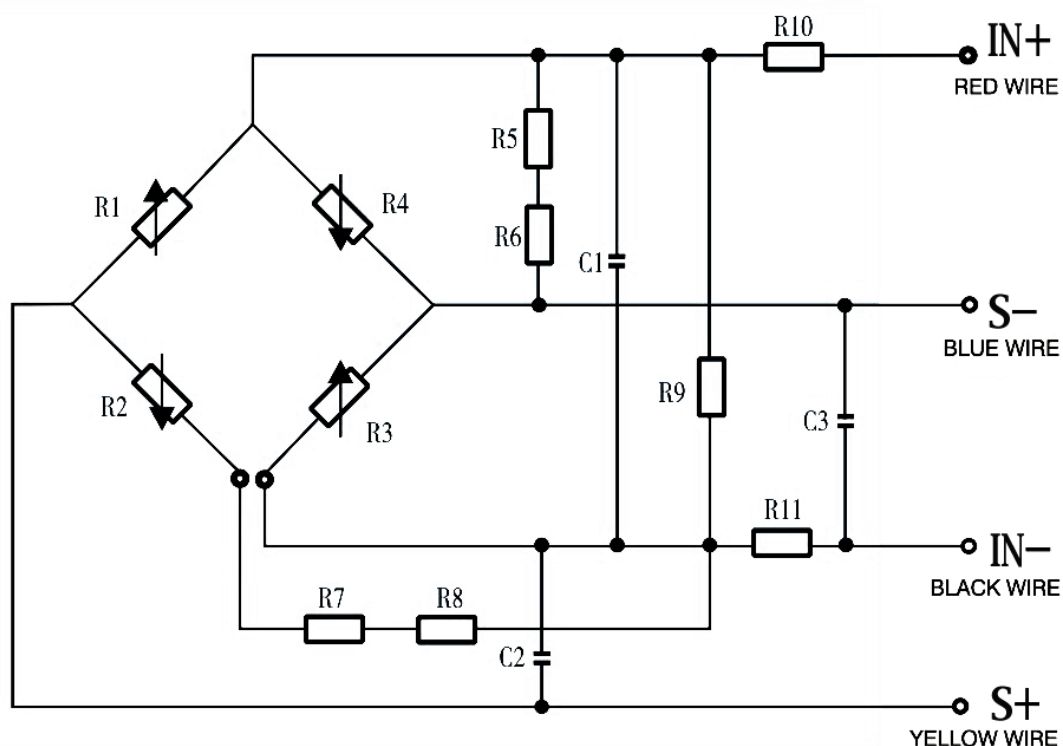
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5.2 Selection guide



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

6 Schematic diagram and wiring mode



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

IN - (black wire) - power supply negative
S - (blue wire) - output negative



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7 Application tips

- The product is an electrostatic sensitive device, please take ESD preventive measures.
- The measured medium should be compatible with the sensor material.
- The assembly of this product shall be assembled into a 'floating' structure according to protect the recommended size.
- Pay attention to protect the sensor's diaphragm and compensation circuit board; avoid falling, crashing etc, which will affect the stability of the product.
- Sensors with 0.01 μ F capacitor (positive power to ground, positive and negative output to ground), if not needed, customers can contact Huatian when ordering.
- The vent pipe of the G sensor should be kept connected with the atmosphere; prohibit water, water vapor or corrosive media from entering the vent pipe.
- In case of any change of pin lead, the label with the pressure sensor shall prevail.