



**TIANSHUI HUATIAN SENSOR**

**CYX23/25 SERIES PRESSURE SENSOR**



**Tianshui Huatian Sensor Co., Ltd**  
天水华天传感器有限公司



**CYX23P**

## 1 Summary

CYX23/25 series oil filled pressure sensor is a joint type flat film sensitive device. It is produced by selecting international advanced highly stable and high precision silicon pressure chip, adopting stress-optimized design of sintering base, through SMD, gold wire bonding, diaphragm welding, high vacuum oil injection, pressure cycle stress relief, high temperature aging, temperature compensation and other processes. More than 30 years of development, production experience and process innovation have given the product excellent stability and excellent performance, which has been widely recognized by users.



# TIANSHUI HUATIAN SENSOR

## CYX23/25 SERIES PRESSURE SENSOR

### 1.1 CYX23/25 series pressure sensor: Recommended thread

The recommended standard thread connection is M20 × 1.5 and G1/2. The product is used for pressure detection of media compatible with stainless steel 316L, NBR or fluororubber.

### 1.2 Gauge type CYX23/25 series pressure sensor model + Y for negative pressure measurement

The negative pressure type is produced by negative pressure special process, which can reliably detect the pressure lower than atmospheric pressure. The range is between - 100kPa and 3MPa.

## 2 Features

- the measuring range is 0kPa ~ 10KPa...10MPa
- it has the form of gauge pressure G, absolute pressure A and sealing gauge pressure S
- constant current / constant voltage power supply
- isolated structure, suitable for a variety of fluid media
- M20 × 1.5, G1/2 thread optional
- all 316L stainless steel

## 3 Main uses

- industrial process control
- liquid level measurement
- gas and liquid pressure measurement
- pressure switch and hydraulic system
- medical and food equipment

## 4 Technical index

### 4.1 Electrical performance

- power supply:  $\leq 3.0\text{mA}$ ; DC  $\leq 10\text{V}$  DC
- electrical connection: 0.2mm<sup>2</sup>, 4-color, 100 mm silicone rubber flexible conductor
- common mode voltage output: 50% of current mode input (typical), 40% of voltage type input (typical)
- input impedance: 2.7k  $\Omega$  ~ 5k  $\Omega$
- output impedance: 3.0k  $\Omega$  ~ 6k  $\Omega$
- response time (10% ~ 90%): < 1ms
- insulation resistance: 500M  $\Omega$  / 100V DC
- allowable overvoltage: 1.5 times full scale



### 4.2 Structure performance

- diaphragm material: stainless steel 316L
- housing material: stainless steel 316L
- pressure pipe material: stainless steel 316L
- pin lead: Gold Plated Kovar
- sealing ring: NBR, fluororubber (optional)
- net weight: About 50g (CYX23), 70g (CYX25)

### 4.3 Environment condition

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

### 4.4 Base conditions

- medium temperature:  $(25 \pm 3) ^\circ\text{C}$
- ambient temperature:  $(25 \pm 3) ^\circ\text{C}$
- humidity:  $(50\% \pm 10\%) \text{ RH}$
- environmental pressure:  $(86 \sim 106) \text{ kPa}$
- 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
0~10kPa	35~60	45	G		0~600kPa	90~120	100	G/A
0~20kPa	70~110	90	G		0~1.0MPa	80~120	100	G/A
0~35kPa	55~80	70	G/A		0~1.6MPa	125~185	150	G/A
0~70kPa	55~80	60	G/A		0~2.0MPa	50~70	60	G/A
0~100kPa	60~85	75	G/A		0~3.5MPa	100~120	110	G/S/A
0~200kPa	65~85	75	G/A		0~7.0MPa	120~150	135	S/A
0~400kPa	60~80	70	G/A		0~10MPa	180~230	200	S/A



### 4.6 Basic parameters

Parameters	Typical value	Maximum	Company
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	K $\Omega$
Zero temperature drift <sup>note 1</sup>	$\pm 0.4$	$\pm 1.0$	%FS, @25°C
Sensitivity temperature drift <sup>note 2</sup>	$\pm 0.4$	$\pm 1.0$	%FS, @25°C
Long term stability	0.2	0.3	%FS / year
Exciting current	1.5(the maximum input voltage can be 10V)		mA
Insulation resistance	500 (100VDC)		M $\Omega$
Compensation temperature <sup>note 3</sup>	0~50; -10°C~70°C		°C
Working temperature	-40~+125		°C
Storage temperature	-40~+125		°C
Response time	$\leq 1$		ms
Housing and diaphragm material	316L stainless steel		
Ed seal ring	18.5× 23.9 × 1.5mm Fluororubber <sup>note 4</sup> , nitrile rubber		
Measuring medium	Fluids compatible with 316L, nitrile rubber or fluoroelastomer		
Life (25 °C)	> 1 × 10 <sup>8</sup> pressure cycle (80% FS)		times
Filling medium	silicone oil		

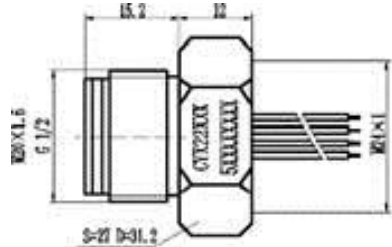
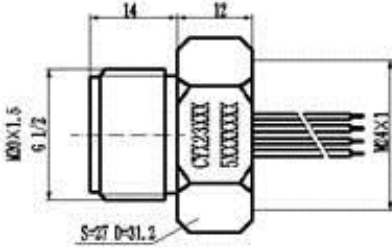
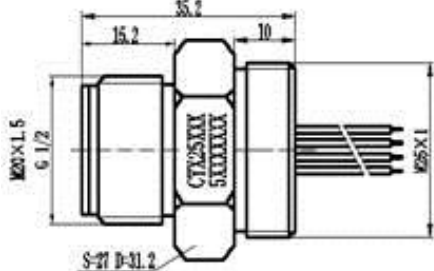
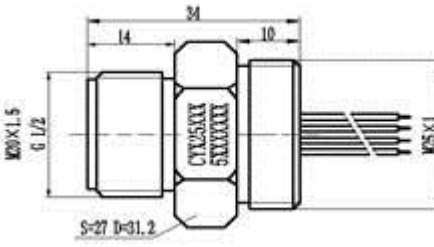
Note 1 & note 2: The typical value of zero temperature drift and sensitivity temperature drift of 0-10kPa is 0.5%FS@25°C, maximum 1.2%FS@25°C.

Note 3: 200kPa and below range, compensation temperature 0 to 50°C; above 200kPa, compensation temperature -10°C to 70°C.

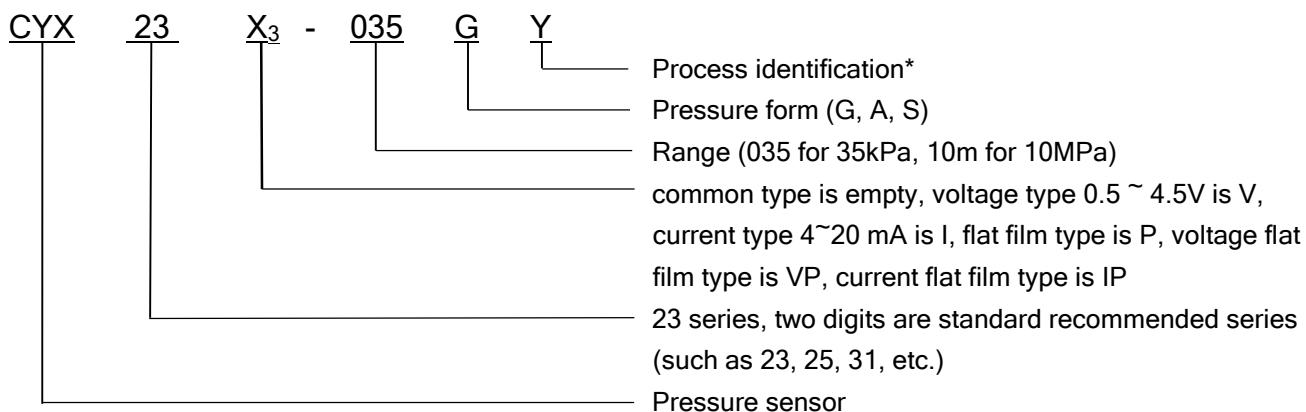
Note 4: The temperature resistance range of fluororubber seal ring is - 20 °C ~ 200 °C, and its low temperature performance is poor. When the temperature range is lower than -20 °C, please verify the use.

### 5 Selection structure

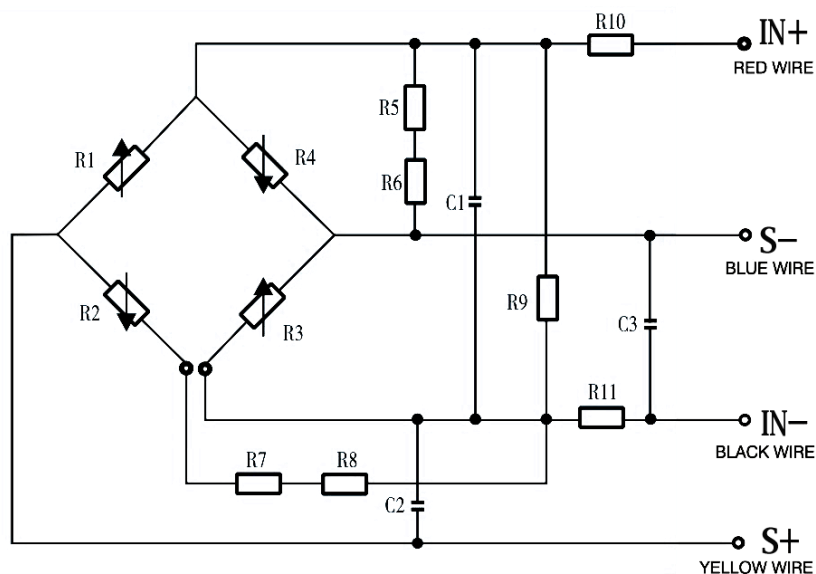
#### 5.1 Model selection and outline drawing

Series	Range	Model	Outline drawing
CYX23/P	-100kPa~10MPa	CYX23	
		CYX23P	
CYX25/P	-100kPa~10MPa	CYX25	
		CYX25P	

#### 5.2 Selection Guide



### 6 Schematic diagram and wiring mode



IN+ (red wire) - positive supply

S+ (yellow wire) - positive output

IN- (black wire) - negative supply

S- (blue wire) - negative output

### 7 Application Tips

- The sealing method of the pressure sensor is recommended for the hexagonal ED seal structure. Avoid excessive torque affecting the stability of the pressure sensor during thread installation. The recommended torque is not greater than the following values according to the pressure range: 0~500kPa, 0.9Nm; 500kPa~2MPa, 1.1Nm; 2MPa~10MPa, 1.6Nm.
- Pay attention to protect the front diaphragm and the compensation circuit board at the back end of the pressure sensor, so as not to damage the performance or cause damage to the sensor.
- Do not press the metal diaphragm with hands or hard objects to avoid damage to the sensor due to chip deformation or perforation
- The ventilation pipe at the rear of the G-type sensor should be connected with the atmosphere; water, water vapor or corrosive media are not allowed to enter the reference chamber at the rear of the sensor.
- Avoid falling, hitting, etc., which will affect the stability of the sensor
- In case of change in the pin lead, the label carried by the sensor shall prevail.