

## ESS312 Compact Size Piezoresistive Pressure Sensor



▪ Range: 0KPa-0.2Mpa~100MPa ▪ Overload Pressure: 150%~300% ▪ Accuracy: 0.2%/FS ▪ Diameter:  $\Phi$ 12.6mm

### Description

ESS312 Compact Size Pressure Sensor is a new range of sensor that benefit from smaller capsule dimensions ( $\Phi$ 12.6mm) and crevice free diaphragms. It uses a high-sensitivity piezoresistive silicon die as sensing component, which is protected against ambient influences by SS316 housing sealed with a concentrically corrugated diaphragm. Inside the housing, the filled silicone oil assures the measured pressure can be transmitted onto silicon die and then transform the pressure to electric signal.

ESS312 is available the ranges from 200kpa to 100Mpa.

### Key Features & Benefits

- Pressure range 0-200Kpa-100MPa
- Gauge, Absolute, Sealed gauge
- Constant Current: 1.5mA
- Voltage power supply: For 19mm only
- Isolated construction, measure various media
- Full Stainless Steel 316
- Wide temperature compensation  $-10^{\circ}\text{C} \sim 80^{\circ}\text{C}$
- Long-term stability  $\pm 0.2\%$ FS/year

### Application

- Industrial process control
- Level measurement
- Gas, liquid pressure measurement
- Pressure checking meter
- Pressure calibrator
- Liquid pressure system and switch
- Cooling equipment & A/C system
- Aviation and navigation inspection
- Pneumatics and hydraulics systems

### Standard Range

Range	Overload	Output/F.S (mV)	Typical Value(mV)	Pressure Type
0~10KPa	300%	35~60	45	G
0~35KPa	300%	55~80	70	G/A/D
0~70KPa	300%	55~80	60	G/A/D
0~100KPa	300%	60~85	75	G/A/D
0~200 KPa	300%	65~85	75	G/A

### Technical Parameters

Parameters	Typ.	Max.	Unit
Nonlinearity	0.2	0.5	%FS
Hysteresis	0.05	0.08	%FS
Repeatability	0.05	0.08	%FS
Zero Output	$\pm 1$	$\pm 2$	mV DC
FS Output	100		mV DC
Input/ Output Impedance	2.6	5.0	k $\Omega$

## ESS312 GID-3-EV03.3.2

0~400 KPa	300%	60~80	70	G/A
0~1.0 MPa	300%	80~120	100	G/A
0~2.0 MPa	200%	50~70	60	G/A
0~3.5 MPa	200%	100~120	110	G/S/A
0~7.0 MPa	200%	120~150	135	S/A
0~10 MPa	200%	180~230	200	S/A
0~25 MPa	200%	140~170	150	S/A
0~40 MPa	200%	230~280	250	S/A
0~60 MPa	200%	100~160	130	S/A
0~100 MPa	150%	100~150	120	S/A

**Notes:** G for Gauge pressure; A for Absolute pressure; D for Differential pressure; S for Sealed gauge.

Zero Temp. Drift*	±0.15	±0.8	%FS, @25°C
Sensitivity Temp. Drift*	±0.2	±0.7	%FS, @25°C
Long-term Stability	0.2		%FS/year

Range -100KPa~100MPa

\*The typical value of 0~10KPa and 0~20KPa's zero temperature drift and sensitivity temperature drift is 0.4%FS@25°C, max value is 1.6%FS@25°C



## Construction Performance

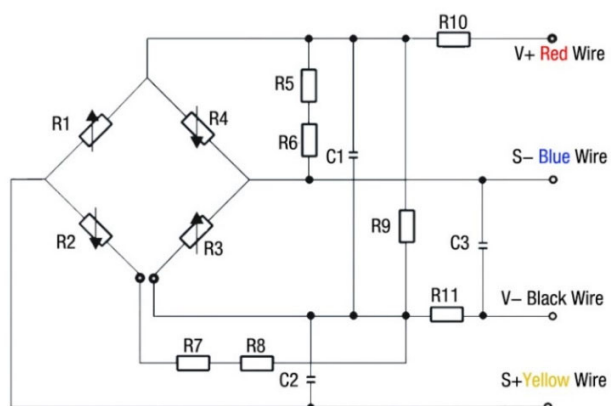
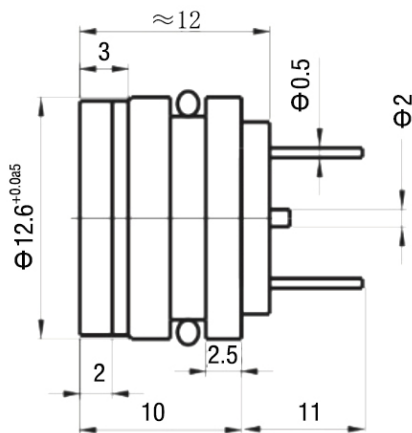
- Diaphragm:** Stainless Steel 316L
- Housing:** Stainless Steel 316L
- Pressure leading tube:** Stainless Steel 316L
- O Ring:** Φ12\*1.8mm (nitrile rubber or viton)
- Measuring Medium:** Which is compatible with SS316L, viton, nitrile rubber
- Packing Medium:** Silicon Oil
- Net weight:** 25g

## Electric & Environment Performance

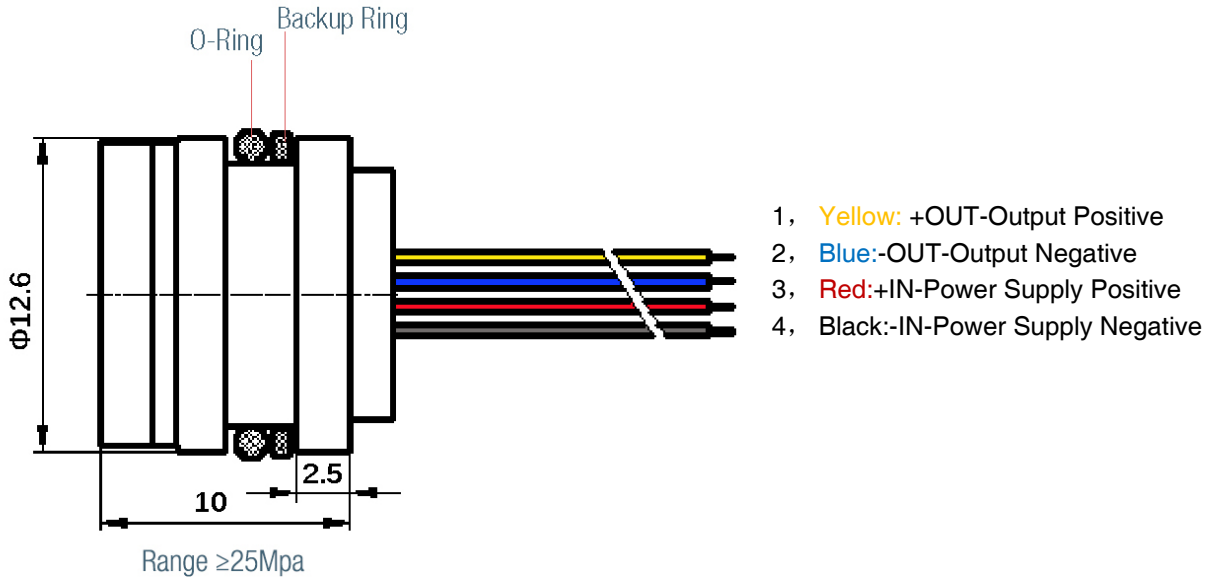
- Power supply:** 1.5mA
- Insulation Resistance:** 500MΩ@500VDC
- Overpressure:** 1.5~3 times FS
- Vibration (20~500Hz):** 20G
- Useful Time (25°C):** >1\*100 Million Times @Pressure Circulation(80%FS)
- Response Time:** ≤1ms
- Storage Temp.:** -40~+125°C
- Operating Temp.:** -40~+85°C
- Compensation Temp.:** 0~50°C; -10~80°C @ 0~70 (7KPa,20 KPa,35 KPa)

## Drawing & Electrical Connection

ESS312 Compact Size Piezoresistive Pressure Sensor Range: 0-0.2MPa~100MPa



ESS312 Compact Size Piezoresistive Pressure Sensor Range: 0-0.2MPa~100MPa



Ordering Procedure

ESS3	High Stable OEM Piezoresistive Sensor						
	Code	Model					
	12	Welded Flat Base Piezoresistive Pressure Sensor					
		Cod	Span	Code	Span	Code	Span
		R05	0~200KPa	R09	0~3.5 MPa	R13	0~40 MPa
		R06	0~400KPa	R10	0~7.0 MPa	R14	0~60 MPa
		R07	0~1.0MPa	R11	0~10.0 MPa	R15	0~100 MPa
		R08	0~2.0Mpa	R12	0~25 MPa		
		Code	Pressure Type				
		G	Gauge				
		A	Absolute				
		S	Sealed Gauge				
		Code	Power Supply				
		M	1.5mA				
		V5	5V (for 19mm only, not available for ESS312)				
		V10	10V (for 19mm only, not available for ESS312)				
		Code	Pressure connection				
		0	O-ring -NBR				
		1	O-ring -Viton				
		Code	Electric connection				
		1	Kovar pin				
		2	Rubber flexible silicon wires (10cm)				
ESS3	12	R03	G	M	0	2	

**Note:** ❶ Extremely attention must be paid to sensor installation process to avoid any miss conduction that affect the sensor performance, ❷ please protect the diaphragm and the compensated board carefully to prevent any damage. ❸ Please contact us if your requested working temperature lower than -20 °C