

## ESS331 High Temperature Pressure Sensor



Range: 35kpa~10MPa ■ Overload: 150%~300% ■ Stability: 0.2 ■ Excitation: 1.5mA | 5V | 10V ■ Working Temperature:-40-150°C

### Description

The ESS331 series oil-filled core pressure sensor is a connector-type high-temperature flat diaphragm pressure-sensitive device. The high-temperature connector core enhances heat dissipation by moving the pressure core piece backward and uses a threaded front part welded with a diaphragm filled with silicone oil to conduct pressure. The connector part can withstand high temperatures up to 200°C, meeting the needs of high-temperature pressure measurement.

#### The recommended Threads for ESS331 Series Pressure Sensors

The recommended standard thread connectors are M20×1.5 and G1/2, other threads need to be customized. The product is used for pressure detection with media that are compatible with 316L stainless steel and nitrile rubber or fluororubber.

ESS331 High Temperature Pressure Sensor is available pressure ranges from 35Kpa to 10MPa.

#### ESS331 Pressure Sensors for Negative Pressure Measurement.

The negative pressure type oil-filled core pressure sensor is produced using a special process for negative pressure, which can reliably perform detections below atmospheric pressure. The range can be freely chosen between -100kPa to 3MPa.

### Key Features & Benefits

- Pressure range 0.035Mpa~10MPa
- Gauge, Absolute, Sealed gauge
- Constant Current/Voltage power supply
- Isolated construction, measure various media
- High working Temperature: -40-150°C
- Full Stainless Steel 316
- Wide temperature compensation -10°C~80°C
- Long-term stability ±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
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### Technical Parameters

Parameters	Typ.	Max.	Unit
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0~10KPa	300%	35~60	45	G
0~20KPa	300%	70~110	90	G/A
0~35KPa	300%	40~120	70	G/A
0~70KPa	300%	20~140	60	G/A
0~100KPa	300%	50~145	75	G/A
0~200KPa	300%	30~125	75	G/A
0~400KPa	300%	40~150	70	G/A
0~600KPa	200%	90~120	100	G/A
0~1.0 MPa	200%	55~145±20	150	G/A
0~1.6 MPa	200%	80~120	100	G/A
0~2.0 MPa	200%	50~160±20	60	G/A
0~3.5 MPa	200%	60~150±20	110	G/A/S
0~6.0 MPa	200%	60~130±20	135	S
0~10 MPa	200%	110~230±20	200	SA
0~25 MPa	150%	140~170	150	S
0~40 MPa	150%	230~280	250	S
0~60 MPa	150%	100~160	130	S
0~100 MPa	150%	100~150	120	S

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

Nonlinearity	0.2	0.5	%FS
Hysteresis	0.05	0.08	%FS
Repeatability	0.05	0.08	%FS
Zero Output	±1	±2	mV DC
FS Output	100		mV DC
Input/ Output Impedance	2.8	5.0	kΩ
Zero Temp. Drift*	±0.4	±1.0	%FS, @25°C
Sensitivity Temp. Drift*	±0.4	±1.0	%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

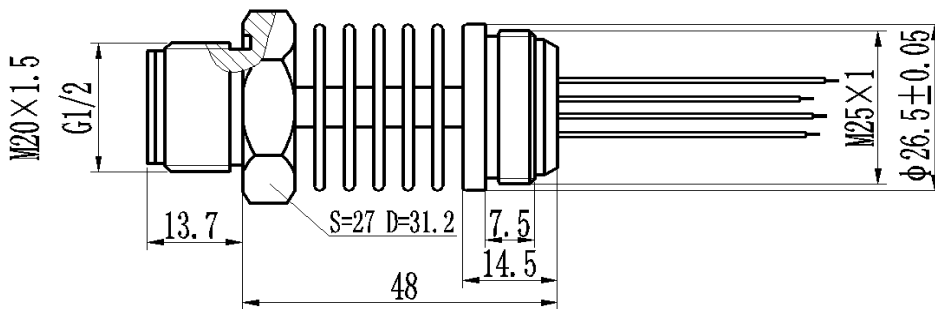
- Diaphragm:** Stainless Steel 316L
- Housing:** Stainless Steel 316L
- Pressure leading tube:** Stainless Steel 316L
- O Ring:** 18.5mm\*23.9mm\*1.5mm-90° (nitrile rubber or viton)
- Measuring Medium:** Which is compatible with SS316L, viton, nitrile rubber
- Packing Medium:** Silicon Oil
- Net weight:** 80g

### Electric & Environment Performance

- Power supply:** 1.5mA/5V
- 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~+150°C
- Compensation Temp.:** 0~50°C @ Current, ≤ 250Kpa,; -10~80°C @ Current, >250Kpa

### Drawing

ESS331 High Temperature Pressure Sensor Range: 35Kpa~10Mpa



Red Wire	Black Wire	Blue Wire	Yellow Wire
+IN	-IN	-OUT	+OUT

### Ordering Procedure

ESS3	High Temperature Pressure Sensor						
	Code	Model					
	31	High Temperature Pressure Sensor					
		Cod	Span	Code	Span	Code	Span
		R03	0~35KPa	R09	0~1.0 MPa		
		R04	0~70KPa	R10	0~1.6 MPa		
		R05	0~100KPa	R11	0~2.0 MPa		
		R06	0~200KPa	R12	0~3.5 MPa		
		R07	0~400KPa	R13	0~7.0 MPa		
		R08	0~600KPa	R14	0~10 MPa		
		Code	Pressure Type				
		G	Gauge				
		A	Absolute				
		S	Sealed Gauge				
		Code	Power Supply				
		M	1.5mA				
		V5	5V				
		V10	10V				
		Code	Pressure connection				
		0	O-ring -NBR				
		1	O-ring -Viton				
		Code	Electric connection				
		1	Kovar pin				
		2	Rubber flexible silicon wires (10cm)				
ESS3	31	R10	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

- ✓ The sealing method for the pressure core is recommended to be a hexagonal ED sealing ring structure. Avoid excessive torque during threaded installation as it may affect the stability of the pressure core. The suggested torque should not exceed the following values based on the pressure range: 0~500kPa, 0.9Nm; 500kPa~2MPa, 1.1Nm; 2MPa~10MPa, 1.6Nm.
- ✓ Take care to protect the front diaphragm and the compensation circuit board at the rear of the pressure core to prevent damage that could affect the performance of the pressure core or cause core damage.
- ✓ Do not press the metal diaphragm with hands or hard objects to avoid core damage due to chip deformation or perforation.
- ✓ The vent tube at the rear of the G-type core should be kept open to the atmosphere; do not allow water, steam, or corrosive media to enter the reference cavity at the back of the core.
- ✓ Avoid dropping or knocking the product, as it can affect product stability.
- ✓ If there is any change in the pin wiring, refer to the actual product with the attached label for accuracy.