General Instruction and Datasheet

Measuring your business

ESS319-I/V GID-3-EV03.3.3

ESS319-I/V Analog Output Pressure Sensor

▪ **Range:** 0～1000bar ▪ **Overload:** 150%~300% ▪ **Accuracy:** 0.25%/FS | 0.5%/FS ▪ **Power Supply:** 10-30Vdc (24Vdc default)

Description

ESS319-I/V amplified pressure sensors incorporate signal conditioning and amplification circuitry directly into the sensor housing or package. This integrated circuitry takes the millivolt-level signal from the sensing elements and amplifies it to a higher-level, standardized output signal, such as 0-5V or 4-20mA or digital I2C (ESS319-IIC).

ESS319-I/V is designed to produce 4-20mA or 0-5V analog output signal.

Based on ESS319 (OEM) Pressure Sensor Cell, ESS319-I/V also 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.

ESS319-I/V analog output pressure sensor is available all pressure ranges from 0 to 1000barg.

Key Features & Benefits

- Pressure range 0～100MPa
- Pressure Type: G/A/S
- Constant current/Voltage power supply
- Isolated construction, measure various media
- Φ19mm OEM Pressure Sensor
- Full Stainless Steel 316
- Wide temperature compensation -10℃～80℃
- Long-term stability ±0.25%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
0~35K Pa	300%	55~80	70	G/A
0~70K Pa	300%	55~80	60	G/A
0~100 KPa	300%	60~85	75	G/A
0~200 KPa	300%	65~85	75	G/A
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

Technical Parameters

Parameters	Typ.	Max.	Unit
Nonlinearity	0.2	0.5	%FS
Hysteresis	0.05	0.1	%FS
Repeatability	0.05	0.1	%FS
Zero Output	±1	±2	mV DC
FS Output	100		mV DC
Input/ Output Impedance	2.6	3.8	kΩ
Zero Temp. Drift*	±0.15	±0.8	%FS,@25℃
Sensitivity Temp. Drift*	±0.2	±0.7	%FS,@25℃

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.*

Long-term Stability	0.1	%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℃, max value is 1.6%FS@25℃*

Construction Performance

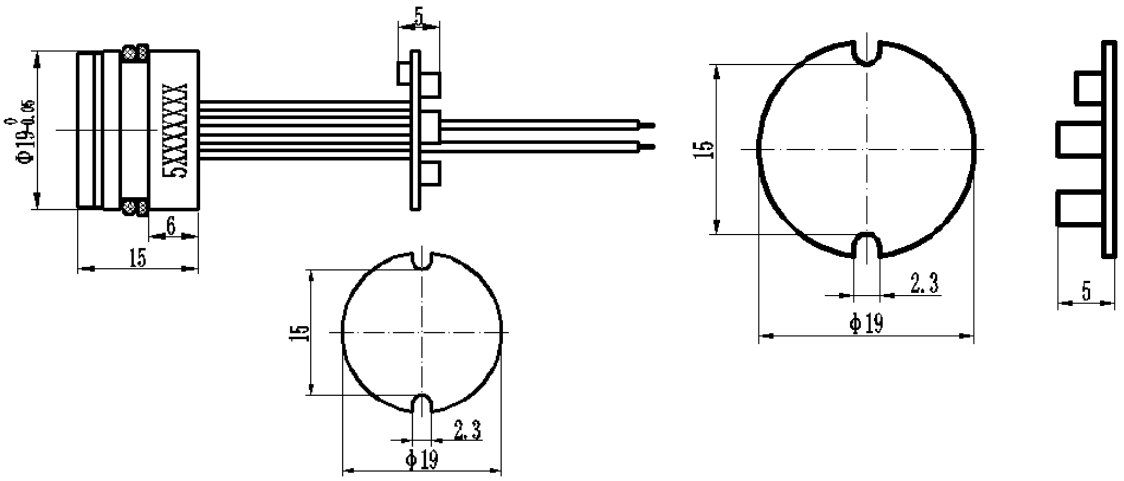
Diaphragm: Stainless Steel 316L
Housing: Stainless Steel 316L
Pressure leading tube: Stainless Steel 316L
O Ring: Φ16*1.8mm (nitrile rubber or viton)
Measuring Medium: Which is compatible with SS316L, viton, nitrile rubber
Packing Medium: Silicon Oil
Net weight: 50g

Electric & Environment Performance

Power supply: 10-30Vdc (24Vdc default)
Output: 4-20mA or 0-5V or 0.5-4.5V (ratio)
Load Resistance: ≤(U-12)/0.02Ω
Overpressure: 1.5~3 times FS
Vibration (20~500Hz): 20G
Useful Time (25℃): >1*100 Million Times @Pressure Circulation(80%FS)
Response Time: ≤1ms
Storage Temp.: -40~+125℃
Operating Temp.: -40~+85℃
Compensation Temp.: 0~50℃; -10~80℃
@ 0～70 (7kPa,20 kPa,35 kPa)

Drawing

ESS319I Analog Output Pressure Sensor Range: 0Kpa~25Mpa



Ordering Procedure

ESS3	High Stable OEM Piezoresistive Sensor

Code	Model
19	High Stable Universal Piezoresistive OEM Sensor
19P	Flush Diaphragm Piezoresistive Pressure Sensor
19T	Pressure & Temperature Sensor
19-I2C	Digital Pressure Sensor
19-I/V	Pressure Sensor with Analog Output (ignal amplified)

Code	Span	Cod	Span	Cod	Span
R01	0~10KPa	R07	0~1.0MPa	R13	0~40 MPa
R02	0~35KPa	R08	0~2.0Mpa	R14	0~60 MPa
R03	0~70KPa	R09	0~3.5 MPa	R15	0~100 MPa
R04	0~100KPa	R10	0~7.0 MPa		
R05	0~200KPa	R11	0~10.0 MPa		
R06	0~400KPa	R12	0~25 MPa		

Code	Pressure Type
G	Gauge
A	Absolute
S	Sealed Gauge

Code	Accuracy
0.25	0.25%
0.5	0.5%

Code	Power Supply
E1	5V
E2	10-30V
E3	24V

Code	Output
I	4-20mA
V1	0.5-4.5V
V2	0-5V
V3	0-10V

Code	PCB Shape
RD	Roundness
RT	Rectangular

Code	Pressure connection
0	O-ring -NBR
1	O-ring -Viton

Code	Electric connection
1	Kovar pin
2	Rubber flexible silicon wires (10cm)

ESS3	19-I/V	R10	G	0.25	E1	V1	RD	0	2

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