

Differential Oil-Filled Pressure Sensor

GaMicos

GS20

PRODUCT OVERVIEW

The GS20 Series oil-filled pressure sensor is a differential pressure sensing device employing a dual stainless steel corrugated diaphragm isolation structure. The measured differential pressure is transmitted to the silicon sensing element through the isolation diaphragms and silicone oil fill, achieving precise differential pressure measurement. This core utilizes internationally advanced high-stability, high-accuracy silicon pressure chips, manufactured through die bonding, gold wire bonding, diaphragm welding, high-vacuum oil filling, pressure cycling stress relief, high-temperature aging, and temperature compensation. The general-purpose model shares the same form factor, dimensions, and sealing method as international mainstream equivalents, ensuring excellent interchangeability. It is widely used for differential pressure and level measurement in media compatible with 316L stainless steel and NBR or FKM.



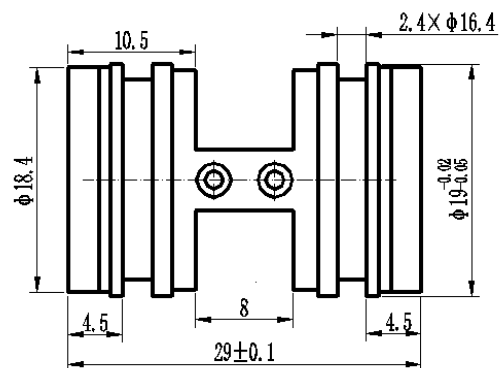
MAIN FEATURES

- Measuring range 0kPa~10kPa...3.5MPa
- Constant current/constant voltage excitation
- Diaphragm-isolated, suitable for various fluid media
- All 316L stainless steel construction
- Static pressure: 10MPa
- 1.5x full scale overpressure

APPLICATIONS

- Industrial process control
- Pressurized vessel level measurement
- Gas and liquid pressure measurement
- Differential pressure measurement
- Flow instrumentation
- Pressure calibration instruments

DIMENSIONS



TECHNICAL SPECIFICATIONS

Electrical Performance

Power supply: $\leq 3.0\text{mA DC}$; $\leq 10\text{V DC}$

Electrical interface: 0.2mm^2 4-color 100mm silicone rubber flexible wire

Common-mode voltage output: 50% of current input (typical), 40% of voltage input (typical)

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 overpressure: $1.5\times$ full scale

Structural Performance

Diaphragm material: 316L stainless steel

Housing material: 316L stainless steel

Pin leads: silicone rubber flexible wire

Sealing ring: NBR, FKM (optional)

Net weight: approx. 38g

Environmental Conditions

Vibration: no change under 10g RMS, (20~2000) Hz

Constant acceleration: 100g, 11ms

Media compatibility: liquids or gases compatible with 316L and NBR (FKM optional)

Reference Conditions

Media temperature: $(25\pm 3)^{\circ}\text{C}$

Ambient temperature: $(25\pm 3)^{\circ}\text{C}$

Humidity: $(50\%\pm 10\%) \text{ RH}$

Ambient pressure: $(86\sim 106) \text{ kPa}$

Power supply: $(1.5\pm 0.0015) \text{ mA DC}$

Standard Range Sensitivity Output & Optional Pressure Types

Range	Full-Scale Output (mV)	Typical	Pressure Type	Range	Full-Scale Output (mV)	Typical	Pressure Type
0~10kPa	35~60	45	D	0~200kPa	65~85	75	D
0~20kPa	70~110	90	D	0~400kPa	60~80	70	D
0~35kPa	55~80	70	D	0~1.0MPa	80~120	100	D
0~70kPa	55~80	60	D	0~2.0MPa	50~70	60	D
0~100kPa	60~85	75	D	0~3.5MPa	100~120	110	D

Basic Parameter

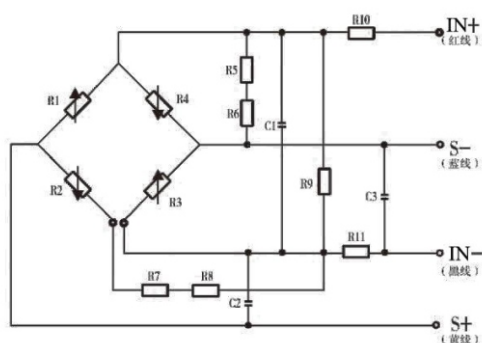
Parameter	Typical	Maximum	Unit
Full-scale output	80	150	mV
Zero offset	±1	±2	mV
Non-linearity	0.2	0.5	%FS
Hysteresis	0.05	0.08	%FS
Repeatability	0.05	0.08	%FS
Input/Output impedance	2.6	5.0	kΩ
Zero-point thermal drift	±0.4	±1.0	%FS,@25°C
Sensitivity thermal drift	±0.4	±1.0	%FS,@25°C
Long-term stability	0.2	0.3	%FS/Yr
Excitation current	1.5 (Maximum input voltage: 10V)		mA
Insulation resistance	500 (100VDC)		MΩ
Compensated temperature	0~50; -10~70 (Note)		°C
Operating temperature	-40~+125		°C
Storage temperature	-40~+125		°C
Response time	≤1		ms
Housing & diaphragm material	316 stainless steel		
O-ring	FKM, NBR, VMQ		
Measuring media	Fluids compatible with 316L stainless steel, NBR, FKM, and VMQ		
Service life (25°C)	> 1×10 ⁸ pressure cycles (80%FS)		cycles
Filled fluid	Silicon oil		
Sealing ring	Φ16×1.8mm (NBR or FKM)		

Note 1: 0~10kPa: Zero-point thermal drift, Sensitivity thermal drift: Typical: 0.5%FS@25°C, Maximum: 1.2%FS@25°C。

Note 2: 200kPa and below, compensated temperature 0~50°C; above 200kPa, compensated temperature -10°C~70°C.

Note 3: The temperature range of FKM sealing ring is -20°C~200°C, and poor low-temperature performance., when temperature is below -20°C, please exercise caution.

ELECTRICAL CONNECTION



Wiring: IN+ (Red) – Excitation +
 IN- (Black) – Excitation –
 S+ (Yellow) – Output +
 S- (Blue) – Output –

ORDERING GUIDE

GS20	Pressure Sensor			
	Code	Range		
	01	0–10kPa		
	02	0–20kPa		
	03	0–35kPa		
	04	0–70kPa		
	05	0–100kPa		
	06	0–200kPa		
	07	0–400kPa		
	08	0–1.0MPa		
	09	0–2.0MPa		
	10	0–3.5MPa		
		Code	Excitation	
		C	1.5mA constant current	
		V	≤10V constant voltage	
			Code	Lead Wire Type
			A1	4-color silicone wire
			A2	Gold-plated pins
			A3	Custom
GS20	01	C	A1	

Notes

- The end of the differential pressure sensor with lead wires is the high-pressure side, and the opposite is the low-pressure side. You can also identify the high and low pressure sides from the H and L markings on the core. During use, the pressure applied to the high-pressure side should generally not be less than the low-pressure side.
- A tapered angle should be designed at the entry end of the housing's differential pressure sensor assembly cavity to facilitate sensor insertion and prevent the right-angle edge from scratching the O-ring during assembly. For the sealing method of the differential pressure sensor, a floating seal structure with an O-ring on the side wall is recommended to avoid front/rear end-face compression.
- Protect the front and rear diaphragms and the central compensation circuit board of the differential pressure core from damage that may affect performance or cause core failure.
- During assembly, ensure the tolerance fit between core dimensions and the transmitter housing inner shell. Recommended cavity machining tolerance: +0.02~+0.05 of core diameter.
- Avoid dropping or impact as this may affect product stability.
- If pin connections change, refer to the label attached to the actual core.