

PT10SR-220 Piezoresistive Differential Pressure Transmitter

Introduction

PT10SR-220 Piezoresistive Differential Pressure Transmitter is a compact full-welded (no sealed ring) differential measurement element. Silicon oil is filled in between die and two diaphragms, when the measured differential pressure is added on two diaphragms, the pressure could be transferred onto die through silicon oil. Sensor die connects with amplifier circuit through wires, using semi-conductor's piezoresistive effect, transforming differential pressure signal into electric signal. The output signal from Weston Bridge on the sensing die has a good linear relationship with differential pressure, so the measured differential pressure could be measured precisely. The whole product is used for differential pressure measurement of various gases and liquids in pipeline in many fields including petroleum, chemi-industry, power station and hydrology, etc.



Features

- Full stainless steel construction, compact size, easy installation;
- Welding and full-sealed construction; housing protection IP65;
- Using piezoresistive differential pressure sensor, 316L isolated diaphragm;
- Temperature compensation and aging, stable performance;
- Zero and span adjustable outside for plug connection version.

Application

- Industrial process control
- Differential pressure measurement
- Gas, liquid pressure measure
- Pressure checking meter
- Pressure calibrator
- Ventura and eddy-current flow meter

Electrical Performance

- Power Supply: 15V~28V DC
- Output Signal: 4mA~20mA DC(2-wire); 0V/1V~5V/10V DC, 0mA~10mA/20mA DC(3-wire)
- Electrical Connection: plug or cable
- Response Time: (10%~90%): ≤1ms
- Insulation Resistance: 100MΩ, 50VDC

Construction Performance

- Housing: SS 1Cr18Ni9Ti
- Diaphragm: SS 316L
- Filled liquid: silicon oil

Environment Condition

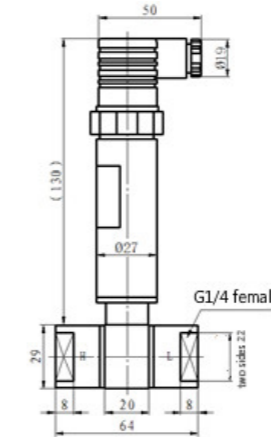
- Shock Effect: $\leq \pm 1\%$ at 3gRMS, 30Hz~2000Hz
- Impact: $\leq 1\%$ at 100g, 10ms
- Media: liquid or gas which is compatible with construction material

Specification

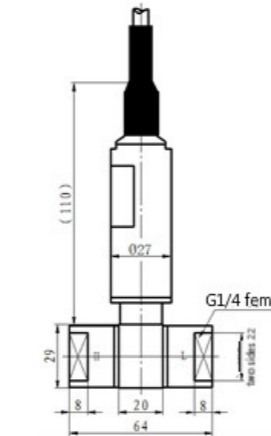
| Range Code | 0A | 02 | 03 | 07 | 08 | 09 | 10 | 12 |
|-----------------|---------------------|------|-------|-------|-------|-------|-----|-----|
| Unit | KPa | | | | | | MPa | |
| Pressure Range | 0~35 | 0~70 | 0~100 | 0~200 | 0~350 | 0~700 | 0~1 | 0~2 |
| +overpressure | 70 | 150 | 200 | 400 | 700 | 1400 | 2.0 | 4.0 |
| -overpressure | 35 | 70 | 100 | 200 | 350 | 700 | 1.0 | 1.0 |
| Static Pressure | $\leq 20\text{MPa}$ | | | | | | | |

| Item* | | Min. | Typ. | Max. | Unit |
|------------------------|----------------------|------|---------|------|---------------------------------------|
| Accuracy | | | 0.5 | | $\pm\%FS$ |
| Zero Thermal Error | $\leq 200\text{kPa}$ | | 0.75 | 1.25 | $\pm\%FS, @35^\circ\text{C}$ |
| | $> 200\text{kPa}$ | | 0.5 | 0.75 | |
| Span Thermal Error | $\leq 200\text{kPa}$ | | 0.75 | 1.25 | |
| | $> 200\text{kPa}$ | | 0.5 | 0.75 | |
| Stability | $\leq 200\text{kPa}$ | | 0.5 | | $\pm\%FS/\text{year}$ |
| | $> 200\text{kPa}$ | | 0.2 | | |
| Static Pressure Effect | | | 0.05 | | $\pm\%FS, \text{ per } 100\text{kPa}$ |
| Compensation temp. | | | 0~70 | | $^\circ\text{C}$ |
| Operation temp. | | | -10~80 | | |
| Storage temp. | | | -40~120 | | |

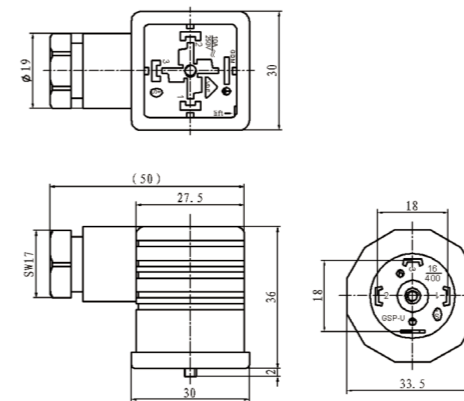
Outline Construction (Unit: mm)



Outline Construction and Dimension(plug connection)



Outline Construction and Dimension(cable connection)



Plug Outline Construction and Arrangement

Electrical Connection

Plug Connection:

| Pin | 2-wire | 3-wire |
|-----|---------|--------|
| 1 | +V | +V |
| 2 | 0V/+OUT | GND |
| 3 | Null | +OUT |

Cable Connection:

| Wire color | 2-wire | 3-wire |
|------------|---------|--------|
| Black | +V | +V |
| Red | 0V/+OUT | +OUT |
| White | Null | GND |

Order Guide

| PT10SR-220 | | Piezoresistive Differential Pressure Transmitter | | | | | | | | | | |
|------------------------|---------------|--|------------------|-------------------------------|-----------------|----------------------------|------------------|-----|----|--------|-----|------|
| Code | | Pressure Range | | | | | | | | | | |
| [0~X] KPa or MPa | Range Code | Pressure Range (kPa) | Overpressure kPa | | Range Code | Pressure Range (MPa) | Overpressure MPa | | | | | |
| | | | + | - | | | + | - | | | | |
| | | | 0A | 0~35 | | | 70 | 35 | 08 | 0~0.35 | 0.7 | 0.35 |
| | | | 02 | 0~70 | | | 150 | 70 | 09 | 0~0.7 | 1.4 | 0.7 |
| | | | 03 | 0~100 | | | 200 | 100 | 10 | 0~1.0 | 2.0 | 1.0 |
| 07 | 0~200 | 400 | 200 | 12 | 0~2.0 | 4.0 | 1.0 | | | | | |
| Code | | Output Signal | | | | | | | | | | |
| E | | 4mA~20mA DC | | | | | | | | | | |
| F | | 1V~5V DC | | | | | | | | | | |
| J | | 0V~5V DC | | | | | | | | | | |
| Q | | 0mA~10mA DC | | | | | | | | | | |
| U | | 0mA~20mA DC | | | | | | | | | | |
| V | | 0V~10V DC | | | | | | | | | | |
| Code | | Construction Material | | | | | | | | | | |
| | | Diaphragm | | Pressure port | | Housing | | | | | | |
| 22 | | SS 316L | | SS | | SS | | | | | | |
| 24 | | SS 316L | | SS 316L | | SS 316L | | | | | | |
| Code | | Others | | | | | | | | | | |
| C ₁ | | M20×1.5 male with face type seal | | | | | | | | | | |
| C ₂ | | G1/4 male | | | | | | | | | | |
| C ₃ | | G1/2 male | | | | | | | | | | |
| C ₄ | | G1/4 female | | | | | | | | | | |
| B ₁ | | 4-core plug connection | | | | | | | | | | |
| B ₂ | | Cable connection length:1.5m | | | | | | | | | | |
| M ₃ | | 3½LCD digital indicator (only 4~20mADC) | | | | | | | | | | |
| M ₄ | | 3½LED digital indicator (only 4~20mADC) | | | | | | | | | | |
| PT10SR-220 | [0~100]kPa | E | 22 | C ₄ B ₂ | the whole spec. | | | | | | | |

Notes

1. We suggest to install tri-valve between the measured point and transmitter to protect the media adding on transmitter's positive and negative cavities slowly;
2. We suggest to make two pressure ports horizontally to reduce installation direction effect;
3. Please pay attention that the static pressure should be less than 20MPa, transmitter positive and negative cavity should be in the rating pressure range;
4. Digital indicator information, please refer to MPM480 datasheet;
5. If the user has special requirement, please feel free to contact our company.