Piezoresistive Pressure Transmitters

Absolute and Gauge Pressure / Accuracy 0.25 %FS

The Y-line transmitters have an extremely small temperature error. This is achieved using an additional circuit containing a temperature sensor that subdivides the temperature range into fields that are 1.5 Kelvin (K) wide. The TK zero and TK compensation values are calculated for each field and programmed into the additional circuit. During operation, these values are fed into the analogue signal path depending on the temperature. Each temperature is the «calibration temperature» for this transmitter. The accuracy thereof is mainly determined by linearity. 120 fields are available, representing a possible temperature range of 180 K. The wider the temperature range, the greater the amount of testing that is needed to minimise the inaccuracy of the mathematical model.

The Series 23SY / 25Y product line is outstanding due to its extreme ruggedness towards electromagnetic fields. The limits of the CE standard are undercut by a factor of up to 10 with conducted and radiated fields.

- **Series 23SY**  Ranges 0.1…1000 bar  Fully welded (no internal seals)
- **Series 25Y**  Ranges 0.5…1000 bar  Flush, fully welded.

A Comprehensive Range

Absolute, barometric, gauge (positive and negative pressures). Many nominal pressure ranges. Current or voltage output.

Flexibility

A modular concept is used, with fast and economical production achieved by using off-the-shelf sensors. Numerous options and variations are available to meet customers’ specific requirements: Pressure ranges, pressure ports, signal outputs, electrical connectors, etc.
Specifications

Pressure Ranges (FS) in bar

<table>
<thead>
<tr>
<th>Pressure Range</th>
<th>Accuracy 1)</th>
<th>Error Band @ 0…50 °C 2)</th>
<th>Error Band @ -10…80 °C 2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt; 2…1000 bar</td>
<td>±0,25 %FS</td>
<td>±0,3 %FS</td>
<td>±0,5 %FS</td>
</tr>
<tr>
<td>&gt; 0,3…2 bar</td>
<td>±0,25 %FS</td>
<td>±0,6 %FS</td>
<td>±1,0 %FS</td>
</tr>
<tr>
<td>0,1…0,3 bar 3)</td>
<td>±0,50 %FS</td>
<td>±2 mbar</td>
<td>±3 mbar</td>
</tr>
</tbody>
</table>

1) Linearity (best straight line) + Hysteresis + Repeatability  
2) Accuracy + Temperature Coefficient + Zero + Span Tolerance
3) Pressure Range 0,1 bar: Linearity ±1 %FS Max; 0,5…4,5 V output not available; 4…20 mA / 0…5 V / 0…10 V outputs only.
4) Measuring range 1000 bar only suited for static applications
5) Linearity: best straight line + Hysteresis + Repeatability

Storage-/Operating Temperature
-40…100 °C

Long Term Stability
Range > 2 bar: 0,1 %FS typ. > 0,2 %FS max.
Range ≤ 2 bar: 2 mbar typ. > 4 mbar max.

Type
- 2-wire
- 3-wire
- 3-wire
- 3-wire

Signal Output
- 4…20 mA
- 0…10 V
- 0…5 V
- 0,5…4,5 V

Limitation Signal Output
- 3,2…22,3 mA
- 1,2…11,2 V
- 0,6…5,6 V
- 0,1…4,9 V

Supply
- 8…32 VDC
- 13…32 VDC
- 8…32 VDC
- 8…32 VDC

Load Resistance
- < (U-8 V) / 0,025 A
- > 5 kΩ
- > 5 kΩ
- > 5 kΩ

Limiting Frequency
- 2 kHz
- 2 kHz
- 2 kHz
- 2 kHz

Power Consumption
- max. 5 mA
- max. 5 mA
- max. 4 mA

Electrical Connection
- Plug / Cable
- Protection 4)  
- Female connector
- Binder-423/723 (5-wire)  
- IP40  
- Incl. in delivery, IP67 4) optional
- GSP EN 175 301-803-A (DIN 43650)  
- IP65 4)  
- Incl. in delivery
- M12 (4-wire)  
- IP67 4)  
- Optional with connection cable
- Souriau (MIL-C26482)  
- IP65 4)  
- Optional
- Cable (max. 80 °C)  
- IP54
- Cable gland  
- IP68

Pressure Connection
- Series 23SY: G1/4", 1/4"-18NPT, G1/2", G1/2" Mano
- Series 25Y: G1/2"

Response Time (Supply ON)
- (0…99 %) < 5 ms

Insulation
- > 10 MΩ@300 V

EMC

Dead Volume Change
- < 0,1 mm³

Material in Media Contact
- Stainless Steel AISI 316L (1.4404/1.4435); 25wY > 400 bar: Inconel 718
- USDA or Viton® O-Ring (no internal seals)

Weight
- ≈ 120 g (depending on version)

Endurance
- > 10 million cycles, 0…100 %FS at 25 °C 4)

Oil Filling
- Silicone oil

Options
- Temperature Range: Other temperature ranges on request. Maximal range: -40…+120 °C
- Fluorocarbon oil (O₂-compatible), olive-oil, lowest temperature oil (≤ 55 °C)
- Intermediate ranges on request, e.g. barometer 0,7…1,2 bar abs.

Intrinsic Safety (ATEX)
- Others on request
- See also data sheet 23SYEi / 25YEi / 26YEi

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Subject to alterations
Companies approved to ISO 9001
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