



PIEZORESISTIVE PRESSURE TRANSMITTERS

FOR INDUSTRIAL APPLICATIONS

SERIES 21Y

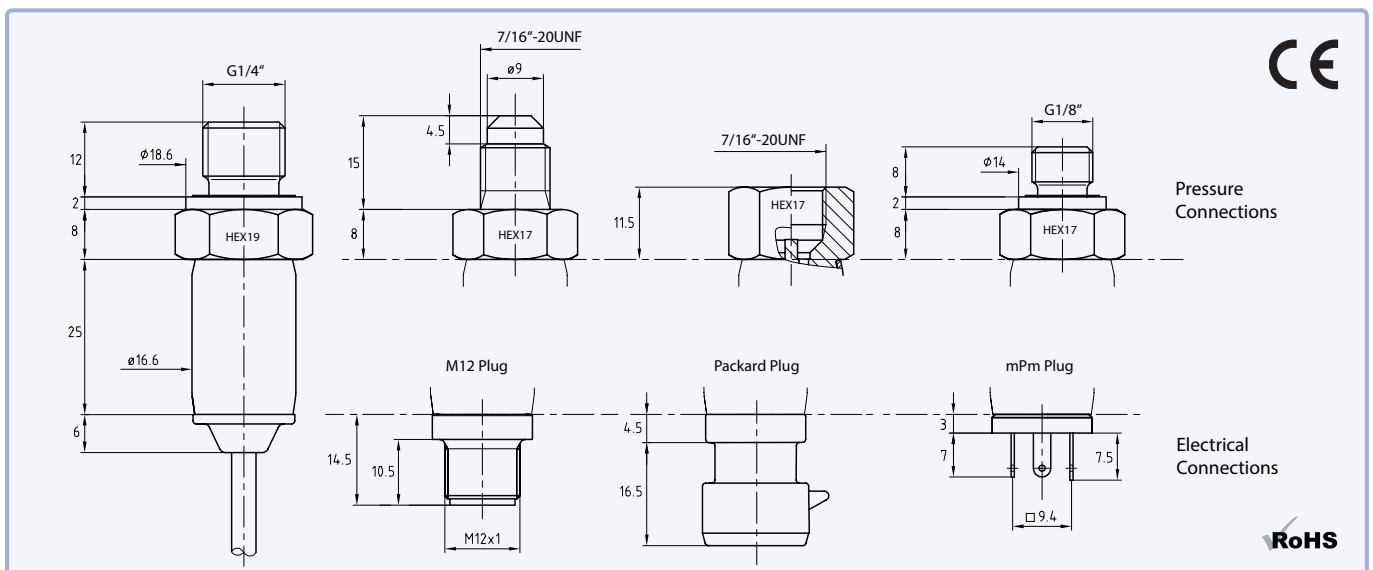
Technology: The Y-line transmitters have an extremely small temperature error. This is achieved using an additional circuit containing a temperature sensor that subdivides the temperature range into fields that are 1,5 Kelvin (K) wide. The TK zero and TK compensation values are calculated for each field 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.

Flexibility: The extent of the vertical range of manufacture, the modular design and the programmable electronics make it possible to manufacture large, customer-specific batches. The pressure sensors (insulated measuring cells) are manufactured in large quantities and kept in stock. These are then welded into the required transmitter head, equipped with electronics and calibrated over the entire temperature and pressure range in systems with up to 1000 measuring stations.

mPm connectors, M12 connectors, Packard connectors and cable connections are used as standard for the electrical connection. In the relative pressure version, the ambient pressure is led into the interior via cable or connector.

Outputs: A 2-wire (4...20 mA) or 3-wire version with voltage output is available as an output signal. For a ratiometric 0,5 to 4,5 V version, we refer to the KELLER Series 21C product range.

EMC: The 21Y 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. These transmitters are also extremely immune to external voltages between the housing and the electrical connection, which is particularly important when frequency converters are being used. The high insulation voltage of 300 V make this product ideal for use in the harshest of environments.





Specifications

Pressure Ranges (all intermediate ranges possible)

| | | |
|------------------|-----------------------------------|--------|
| PR-21Y | 2...30 | bar FS |
| PAA-21Y / PA-21Y | 2...1000* | bar FS |
| Overpressure | 2 x pressure range, max. 1100 bar | |

PAA: Absolute. Zero at vacuum PA: Sealed Gauge. Zero at 1000 mbar abs. PR: Vented Gauge. Zero at atmospheric pressure * Measuring range > 600 bar only suited for static applications

| | | | |
|--------------------------------|-------------|---------------------|--------------------|
| Accuracy ¹⁾ | | typ. $\pm 0,25$ %FS | max. $\pm 0,5$ %FS |
| Total Error Band ²⁾ | 0...50 °C | max. $\pm 1,0$ %FS | |
| | -10...80 °C | max. $\pm 1,5$ %FS | |

¹⁾ Linearity (best fitted straight line) + Hysteresis + Repeatability

²⁾ Accuracy + Temperature Coefficient + Zero + Span Tolerance

Storage-/Operating Temperature -40...100 °C

Stability PR-Version max. $\pm 0,5$ %FS
PAA/PA-Version max. $\pm 0,3$ %FS

| Type | 2-Wire | 3-Wire | 3-Wire |
|--------------------------|---------------------|-----------------|--------------------|
| Signal Output | 4...20 mA | 0...10 V | 0,5...4,5 V |
| Limitation Signal Output | 3,2...22,3 mA | -1,2...11,2 V | 0,1...4,9 V |
| Supply | 8...32 VDC | 13...32 VDC | 8...32 VDC |
| Load Resistance | < (U-8 V) / 0,025 A | > 5 k Ω | > 5 k Ω |
| Limiting Frequency | 2 kHz | 2 kHz | 2 kHz |
| Power Consumption | | max. 5 mA | max. 4 mA |

Electrical Connection - Plug: M12 (4-pole), Packard, mPm
- Cable (max. 80 °C)

Pressure Connection G1/4" male, G1/8" male, 7/16"-20 UNF male and female

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

Isolation > 10 M Ω @ 300 VDC

EMC EN 61000-6-2: 2005 / EN 61000-6-3: 2007 / EN 61326-2-3: 2006

Dead Volume Change < 0,1 mm³

Material in Media Contact - Stainless Steel AISI 316L (1.4404/1.4435)

- Viton[®] Seal external (-20...200 °C, no internal seals)

Protection Class M12-/Packard-Plug: IP67 ³⁾ (with corresponding mating plug)

mPm-Plug: IP65 ³⁾ (with corresponding mating plug)

Cable: IP54 (optional IP67 with standard length 2 m)

Weight \approx 38 g (G1/8") \approx 50 g (G1/4")

Endurance > 10 million cycles, 0...100 %FS at 25 °C

Oil Filling Silicone oil

³⁾ with PR version IP54

Options

Temperature Range Other temperature ranges on request. Maximal range: -40...+120 °C

Oil Filling Fluorocarbon oil (O₂-compatible), olive-oil, lowest temperature oil (-55 °C)

Pressure Connection, Electrical Connection Others on request