



# PIEZORESISTIVE PRESSURE TRANSMITTERS

FOR INDUSTRIAL APPLICATIONS

## SERIES 21 Y

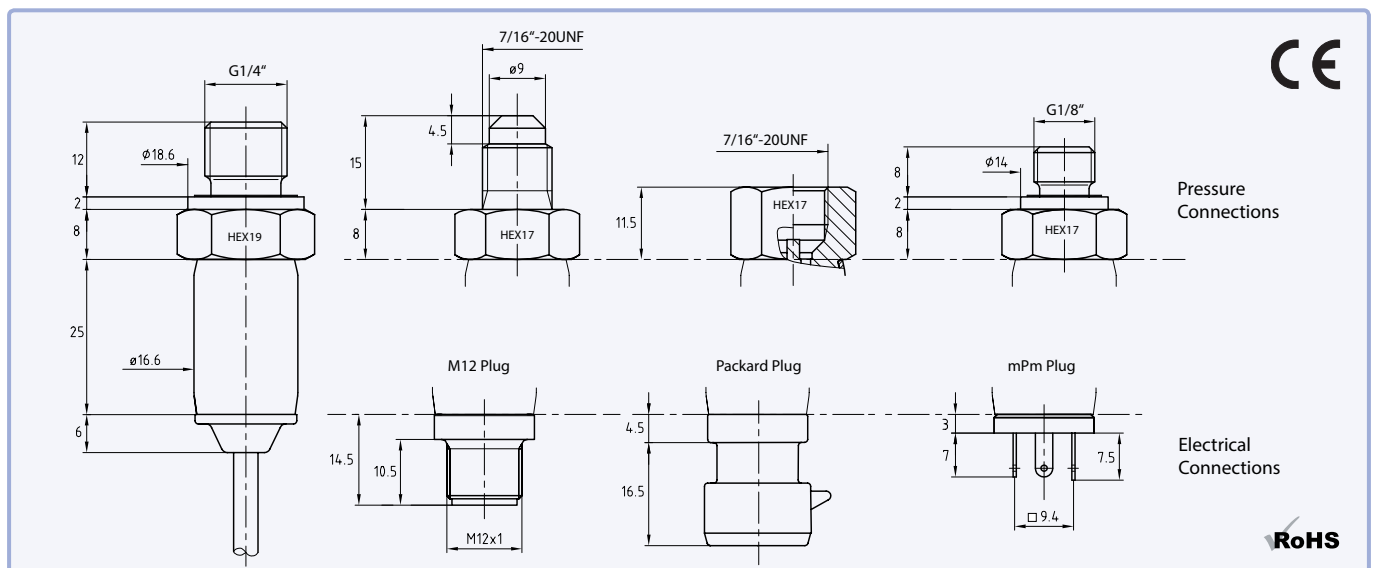
**Technology:** The Y-line transmitters have an extremely small temperature error. This is achieved using an additional circuit containing a temperature sensor that subdivides the temperature range into fields that are 1,5 Kelvin (K) wide. The TK zero and TK compensation values are calculated for each 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 21 C product range.

**EMC:** The 21 Y 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-21 Y	2...30 bar FS
PAA-21 Y / PA-21 Y	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 <sup>1)</sup>		typ. $\pm 0,25$ %FS	max. $\pm 0,5$ %FS
Total Error Band <sup>2)</sup>	0...50 °C	max. $\pm 1,0$ %FS	
	-10...80 °C	max. $\pm 1,5$ %FS	

<sup>1)</sup> Linearity (best fitted straight line) + Hysteresis + Repeatability

<sup>2)</sup> 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	<b>4...20 mA</b>	<b>0...10 V</b>	<b>0,5...4,5 V</b>
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 $\Omega$	> 5 k $\Omega$
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

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 $\Omega$  @ 300 VDC

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

Dead Volume Change    < 0,1 mm<sup>3</sup>

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

- Viton<sup>®</sup> Seal external (-20...200 °C, no internal seals)

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

mPm-Plug:    IP65 (with corresponding mating plug)

Cable:    IP54

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

## Options

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

Oil Filling    Fluorocarbon oil (O<sub>2</sub>-compatible), olive-oil, lowest temperature oil (-55 °C)

Pressure Connection, Electrical Connection    Others on request