

Piezo-Resistive Pressure Transmitter

For Industrial Applications, Ratiometric Output

Series 21C

Technology

The C-series transmitters are noted for their ability to deliver high accuracy over a wide temperature range. This is achieved by means of mathematical modelling of the sensor characteristics and digital compensation. In order to do this, each transmitter is gauged over pressure and temperature, programmed and checked after calibration in the same test set-up.

The modular design of the Series 21C and the extensive vertical range of in-house manufacture provide a high degree of flexibility. The company can quickly adapt to customer requests, even with large production batches. The extensive standard range of connectors and pressure connections means that a CIO measuring cell (Chip-in-Oil) can be quickly welded in from stock if small numbers are involved, and then calibrated to the required temperature range.

RoHS conformity and comprehensive EMC protection are a matter of course, therefore qualifying the Series 21C for use in industrial areas.

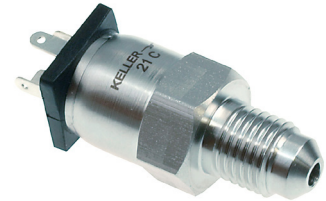
Performance features

- Hermetically sealed electronics, extremely compact design
- No internal seals, all made from AISI 316L steel in media contact, IP67
- Extremely accurate, wide temperature range, outstanding long-term stability, no pressure hysteresis
- Ratiometric signal output, 5 V supply voltage, 24 V overvoltage and polarity reversal protection
- Low cost

Typical usage areas

Cooling and air conditioning systems, pneumatic systems, hydraulic systems, compressors, mechanical engineering, ventilation systems, pump systems etc.

Pressure connections and electrical connections can be combined without limitation.



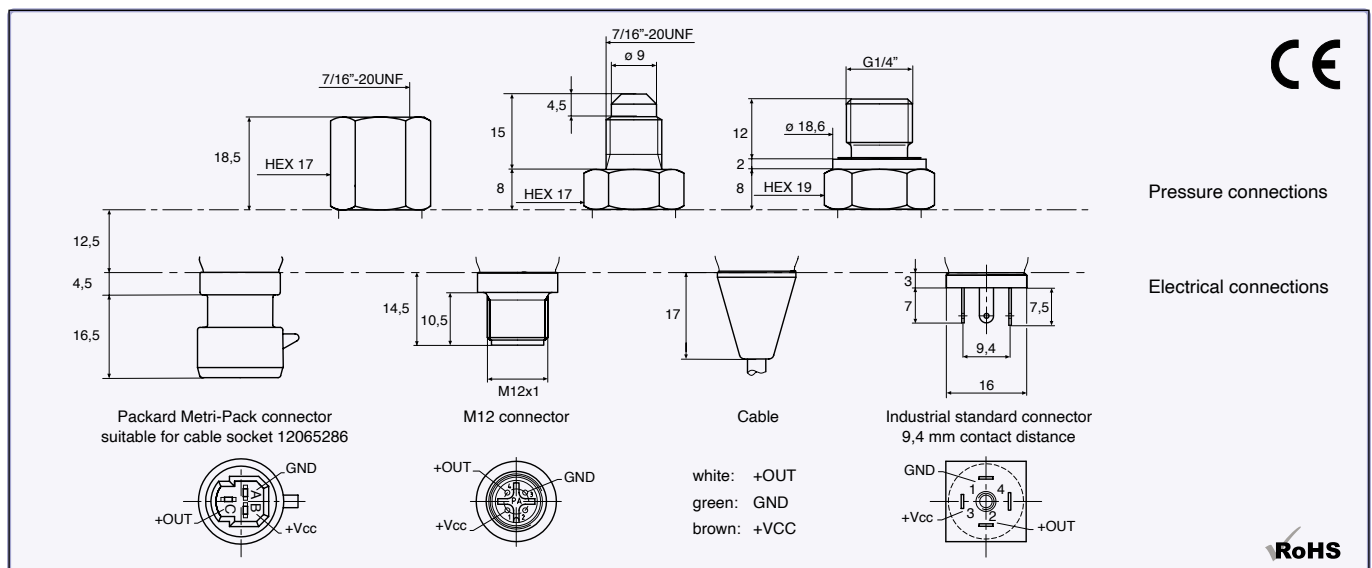
7/16" -20UNF



7/16" -20UNF internal



G1/4"





Specifications

Pressure ranges (all intermediate ranges possible)

| | |
|------------------|----------------------|
| PR-21C | 2...30 bar |
| PA-21C / PAA-21C | 2...1000* bar max. |
| Overpressure | 2,5 x pressure range |

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

| | | |
|--------------------------------|--------------|---------------------|
| Accuracy ¹⁾ | | max. $\pm 0,25$ %FS |
| Total Error Band ²⁾ | 0...50 °C | max. $\pm 1,0$ %FS |
| | -10...80 °C | max. $\pm 1,5$ %FS |
| | -40...125 °C | max. $\pm 2,5$ %FS |

¹⁾ Linearity (best fitted straight line) + hysteresis + repeatability

²⁾ Accuracy + temperature coefficients + zero + span tolerance

Stability max. $\pm 0,3$ %FS

Storage-/Operating Temperature -40...125 °C

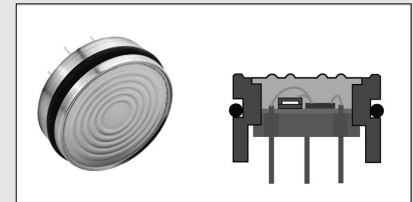
| | |
|---|--|
| Type | 3 wire |
| Signal Output | 0,5...4,5 V ratiometric |
| Supply | 5,0 VDC $\pm 0,5$ V |
| Reverse Polarity and Overvoltage Protection | ± 24 VDC |
| Power Consumption | max. 8 mA |
| Load Resistance | > 5 k Ω |
| Sampling Rate / Bandwidth | 2 kHz / 800 Hz |
| Rise Time T ₉₉ | 1 ms |
| Response Time (Supply ON) | < 5 ms (0...99 %) |
| Electrical Connection | - Plug: M12 (4-pin), Packard Metri Pack, industrial standard plug, 9,4 mm contact distance - Cable (standard length 2 m, max. 80 °C) |
| Pressure Connection | - 7/16"-20 UNF outside and inside - G1/4" |
| Isolation | > 10 M Ω @ 500 VDC |
| EMC | EN 61000-6-2 / EN 61000-6-3 / EN 61326-2-3 |
| Dead Volume Change | < 0,1 mm ³ |
| Material in Media Contact | - Stainless Steel AISI 316L (DIN 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: IP67 ³⁾ |
| Weight | \approx 40 g (depending on pressure and electrical connection) |
| Pressure Endurance | > 10 million pressure cycles 0...100 %FS @ 25 °C |
| Vibration / Shock | 10 g, 5...2000 Hz, X/Y/Z-axis / 75 g sinus 11 ms |
| Oil Filling | Silicone oil |

³⁾ with PR version IP54

Options

| | |
|--|---|
| Temperature Range | Other compensated temperature ranges on request |
| Pressure Connection, electrical Connection | Others on request |
| OEM Version | On request (see box chip-in-oil technology), designs 4L...10L |

CIO technology (Chip-in-Oil)



The heart of a Series 21C pressure transmitter is a «CIO» transducer with all components hermetically sealed.

The signal conditioner is integrated in an oil-filled transducer housing together with the pressure measuring cell. This makes it possible to provide OEM pressure transmitters with a standardised output signal without external electronics which are fully compensated via pressure and temperature.

- Compact design
- Accuracy $\pm 0,25$ %FS
- Total error band up to $\pm 0,5$ %FS @ -10...80 °C
- Pressure range up to 200 bar
- Temperature range of -50...150 °C

Pin assignments (external view)

