Pressure Transmitter with Pressure Proof Housing for Hazardous Applications

These piezoresistive pressure transmitters with pressure proof housing are approved for use in explosion risk areas of group II. They provide stable and accurate measurements of absolute and gauge pressures of liquid and gaseous media in the pressure range between 0.1 and 300 bar.

Flexibility
The modular structure of this product range allows highly flexible applications and solutions that are tailored to users' requirements. Numerous versions are available, for example with different pressure connections, materials and filling oils, or versions for use with oxygen and with special performance characteristics. In addition to the classical analog output signal (Series 23 Ed and 25 Ed), a digital solution based on the successful high-precision Series 30 X transmitters is also available (33 X Ed and 35 X Ed).

Analog transmitters, Series 23 Ed and 25 Ed
This series is based on the stable piezoresistive transducer with analog electronics. The zero point and sensitivity, and the temperature coefficients for the zero point and sensitivity, are compensated by resistors and/or potentiometers.

Digital transmitters Series 33 X Ed and 35 X Ed
This series features microcontroller-based electronic evaluation to ensure maximum accuracy. Each transmitter is gauged across the entire pressure and temperature range. This provides the basis for calculating a mathematical model that corrects all reproducible errors. The pressure value can be read via the interface and at the same time it is also available in analog form as a 4…20 mA or 0…10 V version.

Interface: RS485 half-duplex for 9600 and 115’200 baud for line lengths up to 1400 m and a maximum of 128 bus subscribers. Protocol: KELLER Bus and MODBUS RTU. The devices can be configured (scale analog output, switch units, change filter settings, zeroing, etc.) and measured values can be recorded with the CCS30 or PROG30 software, available free of charge.

Ex-Classification

Series 23 Ed / 25 Ed
Series 33 X Ed / 35 X Ed

Analog connection: illustration of examples

Series 23 Ed / Series 33 X Ed
Series 25 Ed / Series 35 X Ed

Pressure connection: illustrations of examples

T4: -30 °C ≤ T_a ≤ +100 °C, T5: -30 °C ≤ T_a ≤ +95 °C, T6: -30 °C ≤ T_a ≤ +80 °C
### Specifications

#### Standard Pressure Ranges (FS) and Overpressure in bar

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<thead>
<tr>
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<tbody>
<tr>
<td>PR</td>
<td>-1</td>
<td>1</td>
<td>-1</td>
<td>-1</td>
</tr>
<tr>
<td>PA(A)</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>PA</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>7</td>
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<td>30</td>
<td>100</td>
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<td>20</td>
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<td>100</td>
<td>200</td>
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<td>60</td>
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<td>200</td>
<td>300</td>
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<tr>
<td></td>
<td>300</td>
<td>450</td>
<td>300</td>
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All intermediate ranges for the analog output of Series 33/35 X Ed are realizable by spreading the standard ranges. Smallest range: 0.1 bar.

#### Stability

- PR: Vented Gauge. Zero at atmospheric pressure
- PAA: Absolute. Zero at vacuum

<table>
<thead>
<tr>
<th></th>
<th>0.1 %FS typ. (FS &gt; 1 bar)</th>
<th>1 mbar typ. (FS ≤ 1 bar)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature Coefficients...</td>
<td>of Zero</td>
<td>of Sensitivity</td>
</tr>
<tr>
<td>- FS &gt; 1 bar</td>
<td>0.01 %FS/C° max.</td>
<td>0.02 %/C° max.</td>
</tr>
<tr>
<td>- FS 1 bar</td>
<td>0.02 %FS/C° max.</td>
<td>0.02 %/C° max.</td>
</tr>
<tr>
<td>- FS 0.5 bar</td>
<td>0.03 %FS/C° max.</td>
<td>0.02 %/C° max.</td>
</tr>
<tr>
<td>- FS 0.2 bar</td>
<td>0.05 %FS/C° max.</td>
<td>0.02 %/C° max.</td>
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</tbody>
</table>

#### Series 23 Ed / 25 Ed

- Accuracy @ RT \(1\) | 0.2 %FS typ. | 0.5 %FS max.
- Compensated Temperature Range | -10...80 °C |
- Storage- / Operating Temperature \(2\) | -30...100 °C |
- Temperature Coefficients... | of Zero | of Sensitivity |
| - FS > 1 bar | 0.01 %FS/C° max. | 0.02 %/C° max. |
| - FS 1 bar | 0.02 %FS/C° max. | 0.02 %/C° max. |
| - FS 0.5 bar | 0.03 %FS/C° max. | 0.02 %/C° max. |
| - FS 0.2 bar | 0.05 %FS/C° max. | 0.02 %/C° max. |

#### Series 33 X Ed / 35 X Ed

- Series 33 X Ed / Series 35 X Ed: analog or digital
- Accuracy @ RT \(3\) | 0.03 %FS typ. \(4\) | 0.02 %FS typ. \(4\)
- Error Band (10...40 °C) | 0.1 %FS \(4\) | 0.05 %FS \(4\)
- Error band (-10...80 °C) | 0.15 %FS \(4\) | 0.1 %FS \(4\)
- Storage- / Operating Temperature \(2\) | -30...100 °C |

- (1) Linearity (best straight line through zero) + hysteresis + repeatability
- (2) T4: -30 °C ≤ T ≤ +100 °C, T5: -30 °C ≤ T ≤ +95 °C, T6: -30 °C ≤ T ≤ +80 °C
- (3) Linearity (BFSL) + hysteresis + repeatability
- (4) Disturbance of the 4...20 mA signal occurs during communication through RS485.

#### Electrical Connection

- PUR-cable, length 2 m (with PE-sheath and reference tube for gauge).
- Others on request.

#### Optionen

- Pressure Connection: On request
- Pressure Ranges: All pressure ranges between 0.1 and 300 bar
- Material in Media Contact: Hastelloy C-276 (C-22), gold-plated. Others on request.
- Oil Filling: Fluorized oil (O₂-compatible), olive-oil, low temperature oil

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**KELLER AG für Druckmesstechnik**
CH-8404 Winterthur
+41 52 235 25 25
info@keller-druck.com

**KELLER Ges. für Druckmesstechnik mbH**
D-79798 Jestetten
+49 7745 9214 0
eurocenter@keller-druck.com

**KELLER America**
Newport News, Virginia
+1 877 253 5537
sales@kelleramerica.com

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Edition 03/2019
Subject to alterations
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