Pressure transmitter for highest pressure applications
Up to 15,000 bar
Model HP-2

Applications

- Test bench construction
- Water jet cutting
- High pressure pasteurisation
- High pressure cleaning

Special features

- Measuring ranges: 0 ... 1,600 to 0 ... 15,000 bar
- Accuracy: 0.5 % or 0.25 %
- Output signals: 4 ... 20 mA, DC 0 ... 5 V, DC 0 ... 10 V and USB 2.0
- Electrical connection: Angular connector DIN 175301-803 A, circular connector M12 x 1, USB connector and cable outlet
- Process connection: M16 x 1.5 female, M20 x 1.5 female, 9/16-18 UNF female

Description

For highest pressures
The model HP-2 pressure transmitter has been specifically developed for demanding high pressure applications up to 15,000 bar. This makes it one of the few pressure measuring instruments in the world that can reliably measure pressures of this magnitude.

High accuracy
This pressure transmitter features a very high long-term stability and offers extremely high accuracy for the highest pressures. Measuring ranges up to and including 0 ... 10,000 bar can, as an option, be supplied with an even higher accuracy of 0.25 %.

Long service life
Thanks to its excellent load cycle stability, the model HP-2 has a particularly long service life, even with dynamic pressure profiles. A protection against cavitation and pressure spikes, specifically developed for highly dynamic pressure profiles, further extends the service life. For water as a pressure medium, this protection is particularly recommended.
Versions

Model HP-2-S
Standard version

Model HP-2-D
Additionally with DIPS - diaphragm impact protection system

DIPS protects the pressure sensor from cavitation and micro-diesel effects; it is particularly recommended for use with water as a medium.

Further details on request.

Model HP-2-E
Additionally with EPC - Exchangeable Pressure Connection

EPC enables the changing of the process connection without having to change the entire pressure transmitter.

Further details on request.

Measuring ranges

<table>
<thead>
<tr>
<th>Relative pressure</th>
<th>Measuring range</th>
<th>Overpressure limit</th>
<th>Burst pressure</th>
<th>Overpressure limit</th>
<th>Burst pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td>bar</td>
<td>0 ... 1,600</td>
<td>2,300</td>
<td>4,000</td>
<td>0 ... 7,000</td>
<td>11,000</td>
</tr>
<tr>
<td></td>
<td>0 ... 2,500 1)</td>
<td>3,500</td>
<td>6,000</td>
<td>0 ... 8,000</td>
<td>12,000</td>
</tr>
<tr>
<td></td>
<td>0 ... 4,000 1)</td>
<td>5,000</td>
<td>8,000</td>
<td>0 ... 10,000 1)</td>
<td>14,000</td>
</tr>
<tr>
<td></td>
<td>0 ... 5,000 1)</td>
<td>6,000</td>
<td>10,000</td>
<td>0 ... 12,000 1) 2)</td>
<td>16,000</td>
</tr>
</tbody>
</table>
| 1) Optionally also with a measuring cell from Elgiloy®
2) Adjustment at max. 12,500 bar, 15,000 bar is calculated.

The given measuring ranges are also available in MPa.

On request, special measuring ranges between the listed ranges 0 ... 1,600 and 0 ... 10,000 bar are possible.
These special measuring ranges, however, have a higher temperature error and a reduced long-term stability.

Service life
On request, since the service life depends on the actual pressure profile.
### Output signals

<table>
<thead>
<tr>
<th>Signal type</th>
<th>Signal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current (2-wire)</td>
<td>4 ... 20 mA</td>
</tr>
<tr>
<td>Voltage (3-wire)</td>
<td>DC 0 ... 5 V</td>
</tr>
<tr>
<td></td>
<td>DC 0 ... 10 V</td>
</tr>
<tr>
<td>USB</td>
<td>USB 2.0</td>
</tr>
</tbody>
</table>

Other output signals on request.

**Voltage supply**

**Power supply**
The power supply depends on the selected output signal:
- 4 ... 20 mA: DC 10 ... 30 V
- DC 0 ... 5 V: DC 10 ... 30 V
- DC 0 ... 10 V: DC 14 ... 30 V
- USB 2.0: DC 5 V

**Current supply**
- Current output (2-wire): Signal current, max. 35 mA
- Voltage output (3-wire): 8 mA
- USB output: 40 mA

### Accuracy data

#### Accuracy at reference conditions
Including non-linearity, hysteresis, zero offset and end value deviation (corresponds to measured error per IEC 61298-2).

#### Measuring ranges < 10,000 bar

<table>
<thead>
<tr>
<th>Range</th>
<th>Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>≤ ±0.50 % of span (standard)</td>
<td></td>
</tr>
<tr>
<td>≤ ±0.25 % of span</td>
<td></td>
</tr>
</tbody>
</table>

1) only available for measuring ranges < 0 ... 10,000 bar

#### Measuring range = 10,000 bar

<table>
<thead>
<tr>
<th>Range</th>
<th>Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>≤ ±0.50 % of span (standard)</td>
<td></td>
</tr>
<tr>
<td>≤ ±0.25 % of span, typical</td>
<td></td>
</tr>
</tbody>
</table>

1) only available for measuring ranges < 0 ... 10,000 bar

#### Measuring range = 12,000 or 15,000 bar

<table>
<thead>
<tr>
<th>Range</th>
<th>Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>≤ ±0.50 % of span</td>
<td></td>
</tr>
</tbody>
</table>

#### Adjustability of zero point and span
- Current and voltage output:
  - Zero point: ±5 % of span
  - Adjustment is made using potentiometers inside the instrument
- USB output:
  - Zero point: -5 ... +20 % of span
  - Span: -50 ... +5 % of span
  - Setting is made via "EasyCom 2011" software

#### Temperature error at 0 ... 80 °C
- typical: ≤ ±1.0 % of span
- typical: ≤ ±2.0 % of span (special measuring ranges)
- maximum: ≤ ±2.5 % of span

#### Long-term stability at reference conditions
- ≤ 0.1 % of span/year
- ≤ 0.2 % of span/year (special measuring ranges)

### Reference conditions (per IEC 61298-1)

- **Temperature**
  15 ... 25 °C

- **Atmospheric pressure**
  860 ... 1,060 mbar

- **Humidity**
  45 ... 75 % relative

- **Power supply**
  - DC 24 V
  - DC 5 V with USB output

- **Mounting position**
  Calibrated in vertical mounting position with pressure connection facing downwards.

### Operating conditions

#### Ingress protection (per IEC 60529)
For ingress protection see "Electrical connections"
The stated ingress protection only applies when plugged in using mating connectors that have the appropriate ingress protection.

#### Vibration resistance (per IEC 60068-2-6)
0.35 mm (10 ... 55 Hz)

#### Shock resistance (per IEC 60068-2-27)
100 g (2.4 ms)

#### Temperatures
- Medium: 0 ... +80 °C
- Ambient: -20 ... +80 °C
- Storage: -40 ... +85 °C
Time response

**Settling time**
- Current and voltage output: < 1 ms
- USB output: < 10 ms 1)

1) other value on request

**Warming-up period**
< 10 min

Electrical connections

**Available connections**

<table>
<thead>
<tr>
<th>Electrical connection</th>
<th>Ingress protection</th>
<th>Wire cross-section</th>
<th>Cable diameter</th>
<th>Cable lengths</th>
</tr>
</thead>
<tbody>
<tr>
<td>Angular connector DIN 175301-803 A</td>
<td>IP 65</td>
<td>max. 1.5 mm²</td>
<td>6 ... 8 mm</td>
<td>-</td>
</tr>
<tr>
<td>Circular connector M12 x 1 (4-pin)</td>
<td>IP 67</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>USB connector type A</td>
<td>Instrument: IP 67</td>
<td>Connector: IP 20</td>
<td></td>
<td>2 m</td>
</tr>
<tr>
<td>Cable outlet</td>
<td>IP 67</td>
<td>0.5 mm² (AWG 20)</td>
<td>6.8 mm</td>
<td>1.5 m</td>
</tr>
</tbody>
</table>

The stated ingress protection only applies when plugged in using mating connectors that have the appropriate ingress protection.

**Short-circuit resistance**
- S⁺ vs. 0V

**Reverse polarity protection**
- UB vs. 0V

**Overvoltage protection**
- DC 36 V
- DC 5.25 V with USB output

**Insulation voltage**
DC 500 V

**Connection diagrams**

**Angular connector DIN 175301-803 A**

<table>
<thead>
<tr>
<th>2-wire</th>
<th>3-wire</th>
</tr>
</thead>
<tbody>
<tr>
<td>UB</td>
<td>1</td>
</tr>
<tr>
<td>0V</td>
<td>2</td>
</tr>
<tr>
<td>S⁺</td>
<td>-</td>
</tr>
</tbody>
</table>

**Circular connector M12 x 1 (4-pin)**

<table>
<thead>
<tr>
<th>2-wire</th>
<th>3-wire</th>
</tr>
</thead>
<tbody>
<tr>
<td>UB</td>
<td>1</td>
</tr>
<tr>
<td>0V</td>
<td>3</td>
</tr>
<tr>
<td>S⁺</td>
<td>-</td>
</tr>
</tbody>
</table>

**Cable outlet**

<table>
<thead>
<tr>
<th>2-wire</th>
<th>3-wire</th>
</tr>
</thead>
<tbody>
<tr>
<td>UB</td>
<td>brown</td>
</tr>
<tr>
<td>0V</td>
<td>green</td>
</tr>
<tr>
<td>S⁺</td>
<td>-</td>
</tr>
</tbody>
</table>

**USB connector type A**

<table>
<thead>
<tr>
<th></th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>+5V</td>
<td></td>
</tr>
<tr>
<td>GND</td>
<td>4</td>
</tr>
<tr>
<td>D⁺</td>
<td>3</td>
</tr>
<tr>
<td>D⁻</td>
<td>2</td>
</tr>
</tbody>
</table>

**Legend**
- UB, +5V: Positive power supply
- 0V, GND: Reference potential
- S⁺: Positive output terminal
- D⁺, D⁻: Negative output terminal

**Time response**

**Settling time**
- Current and voltage output: < 1 ms
- USB output: < 10 ms 1)

1) other value on request

**Warming-up period**
< 10 min
### Process connections

<table>
<thead>
<tr>
<th>Process connection</th>
<th>Type of sealing</th>
<th>Maximum measuring range</th>
</tr>
</thead>
<tbody>
<tr>
<td>M16 x 1.5 female, with sealing cone</td>
<td>60° sealing cone</td>
<td>0 ... 7,000 bar</td>
</tr>
<tr>
<td>M20 x 1.5 female, with sealing cone</td>
<td>60° sealing cone</td>
<td>0 ... 15,000 bar</td>
</tr>
<tr>
<td>9/16-18 UNF female</td>
<td>60° sealing cone</td>
<td>0 ... 7,000 bar</td>
</tr>
</tbody>
</table>

Other process connections on request.

The maximum permissible pressure at the installation point is dependent on the high-pressure pipes used. For the valid values, see the high-pressure pipe manufacturer's documentation.

### Materials

**Wetted parts**
- Process connection: Stainless steel 1.4534
- Sensor: Stainless steel 1.4534 or 2.4711 Elgiloy®

For hydrogen as a medium, contact the manufacturer.

### CE conformity

**Pressure equipment directive**
97/23/EC

**EMC directive**
2004/108/EC, EN 61326 emission (group 1, class B) and interference immunity (industrial application)

**RoHS conformity**
Yes

### Approvals

- **GOST-R**, import certificate, Russia
- **GOST**, metrology/measurement technology, Russia
- **CRN**, safety (e.g. electr. safety, overpressure, ...), Canada

### Certificates

**Supplied documents**
- Test report, 5 measuring points
- Operating instructions

The required documents can be ordered separately.

**2.2 Test certificate**
- State-of-the-art manufacturing
- Material proof, wetted metal parts
- Confirmation of the class and indication accuracy

**3.1 Acceptance test certificate**
- Material proof, wetted metal parts
- Material proof, wetted metal parts with suppliers' certificate (melting analysis)
- Confirmation of the class and indication accuracy

**Calibration certificate**
- 3.1 Factory calibration certificate
- DKD/DAkkS calibration certificate

Approvals and certificates, see website
Dimensions in mm

Model HP-2-S

- with angular connector DIN 175301-803 A
- Weight: approx. 300 g

Model HP-2-S

- with circular connector M12 x 1 (4-pin)
- Weight: approx. 300 g

Model HP-2-S

- with cable outlet with 1.5 m length
- Weight: approx. 300 g

Model HP-2-S

- with USB connector type A
- Weight: approx. 300 g

Model HP-2-D

- with optional cavitation and pressure-spike protection

Model HP-2-E

- Weight: approx. 300 g
Process connections

Accessories and spare parts

Mating connectors

<table>
<thead>
<tr>
<th>Designation</th>
<th>Order number without cable</th>
<th>with 2 m cable</th>
<th>with 5 m cable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Angular connector DIN 175301-803 A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>with gland, metric</td>
<td>11427567</td>
<td>11225793</td>
<td>11250186</td>
</tr>
<tr>
<td>with gland, conduit</td>
<td>11022485</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Circular connector M12 x 1, 4-pin</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>straight</td>
<td>2421262</td>
<td>11250780</td>
<td>11250259</td>
</tr>
<tr>
<td>angled</td>
<td>2421270</td>
<td>11250798</td>
<td>11250232</td>
</tr>
</tbody>
</table>

Sealings for mating connectors

<table>
<thead>
<tr>
<th>Designation</th>
<th>Order number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Angular connector DIN 175301-803 A</td>
<td>1576240</td>
</tr>
</tbody>
</table>

Spare-parts kit for models HP-2-D and HP-2-E
Consisting of a replacement connection thread, replacement sealing disc and a mounting aid.
Spare-parts kit suitable for the following process connections:

<table>
<thead>
<tr>
<th>Process connection</th>
<th>Order number HP-2-D</th>
<th>Order number HP-2-E</th>
</tr>
</thead>
<tbody>
<tr>
<td>M16 x 1.5 female</td>
<td>14039895</td>
<td>14050403</td>
</tr>
<tr>
<td>M20 x 1.5 female</td>
<td>13319923</td>
<td>14050404</td>
</tr>
</tbody>
</table>

Software
The full software is available to download as freeware from www.wika.com.
The software is also available on CD (order no.: 11478901).

Ordering information
Model / Measuring range / Output signal / Accuracy at reference conditions / Electrical connection / Process connection

© 2011 WIKA Alexander Wiegand SE & Co. KG, all rights reserved.
The specifications given in this document represent the state of engineering at the time of publishing.
We reserve the right to make modifications to the specifications and materials.