Pressure sensor with digital output RS-232
For precision measurements
Model D-10, D-11

Applications
- Automation engineering
- Test bench construction
- Laboratories
- Maintenance shops

Special features
- Accuracy < 0.1 % (optionally 0.05 %) of span
- Digital output RS-232 with 9-pin Sub-D connector
- No additional temperature error in the range 0 ... 50 °C
- Measuring ranges from 0 ... 250 mbar to 0 ... 1,000 bar

Description
**High precision**
These pressure sensors, with measurement accuracies of 0.1 % (or 0.05 %), have been designed for allowing direct communication with the PC, in particular in the testing, calibration and service technologies. The power supply of the pressure sensor is taken directly from the RS-232 interface of the PC.

**Digital signal processing**
Through digital data processing, the pressure sensors achieve excellent values for non-linearity and non-repeatability. Due to the temperature transducer integrated into the process connection and to digital data processing by means of a microcontroller, system-related temperature errors, such as those usually encountered in pressure measuring instruments, are compensated. This guarantees an overall error below 0.1 % in the range 0 ... 50 °C.

EasyCom software
The EasyCom communication software, which is included in delivery, allows not only the display of pressure and temperature, but also the storage of the measured values for pressure and temperature (data logger function). Via the software, the user can also easily adjust zero point and span, if required.

Flush version
The D-11 models, with their flush diaphragm, are especially suited to measurement in highly viscous, contaminated or crystallising media.
Specifications

<table>
<thead>
<tr>
<th>Specifications</th>
<th>Measuring ranges bar</th>
<th>0.25</th>
<th>0.4</th>
<th>0.6</th>
<th>1</th>
<th>1.6</th>
<th>2.5</th>
<th>4</th>
<th>6</th>
<th>10</th>
<th>16</th>
</tr>
</thead>
</table>
|                |                      | 25   | 40  | 60  | 100 | 160 | 250 | 400 | 600 | 1,000 |)

Overload safety

- Measuring ranges ≤ 1.6 bar: 5-fold
- Measuring ranges 2.5 ... 16 bar: 4-fold (measuring range 10 bar: 3-fold)
- Measuring ranges 25 ... 600 bar: 2-fold
- Measuring range 1,000 bar: 1.5-fold

[Vacuum, overpressure, +/- and absolute pressure are available]

± measuring ranges: Minimum span 400 mbar, e.g. -200 ... +200 mbar

Material

- Wetted parts
  - Model D-10: Stainless steel (with measuring range > 25 bar additionally PH steel)
  - Model D-11: Stainless steel (option: Hastelloy®); O-ring: NBR (option: FPM/FKM or EPDM)
- Case: Stainless steel

For other materials, see WIKA diaphragm seals product range

Internal transmission fluid

- Synthetic oil
- Halocarbon oil for oxygen versions (option)
- Listed by FDA for food industry (option)

No transmission fluid for model D-10 with measuring range > 25 bar

Power supply U+

- Via RS-232 interface
- When connecting the D-1x to a notebook/laptop, an optionally available adapter for voltage supply may be necessary.
- RS-232 (8N1/9600 baud) (option: USB via serial converter)

Output signal

- 3 adjustable operating modes:
  - Pressure and temperature values on request by host system
  - Cyclic pressure output, time interval adjustable 10 ms ... 10 min
  - Cyclic pressure and temperature output, time interval adjustable 10 ms ... 10 min

- Due to the Windows access times, 10 ms cannot be achieved via the EasyCom software.

Resolution

- Pressure value: 50,000 digits
- Temperature value: 0.5 K

Adjustability

- Zero point: -5 ... +20 % (adjustment via EasyCom software)
- Span: -5 ... +5 % (adjustment via EasyCom software)

Internal measuring rate

- 100 Hz
- 50 Hz with measuring ranges ≤ 1 bar or ± measuring ranges ≤ 3 bar span

Warming-up period

- < 10 min

Insulation voltage

- DC 500 V

Accuracy

- ≤ 0.10 % of span in the range 0 ... 50 °C
- < 0.05 at 20 °C (option, not for: ± measuring ranges and measuring ranges ≤ 0.4 bar)

- Including non-linearity, hysteresis, zero offset and end value deviation (corresponds to measured error per IEC 61298-2). Calibrated in vertical mounting position of process connection.

Non-linearity

- ≤ 0.04 % of span (BFSL) per IEC 61298-2

Long-term stability per year

- ≤ 0.1 % of span (at reference conditions)

Permissible temperature ranges

- Medium: -20 ... +80 °C (others on request)
- Ambient: -20 ... +80 °C
- Storage: -40 ... +85 °C

Model D-11 is not available in an oxygen version.

Model D-10 is only available in an oxygen version with medium temperatures between -20 ... +60 °C.

Compensated temperature range

- -20 ... +80 °C

Temperature coefficients in the compensated temperature range

- The temperature errors in the range 0 ... 50 °C are already included in the accuracy.
- Mean TC of zero: ≤ 0.1 / 10 K % of span
- Mean TC of span: ≤ 0.1 / 10 K % of span

Shock resistance

- < 100 g per IEC 60068-2-27 (mechanical shock)

Vibration resistance

- < 5 g per IEC 60068-2-6 (vibration under resonance)

Electrical safety

- Reverse polarity protection UB+ to UB-

Software

- EasyCom communication software

Weight

- approx. 0.3 kg

1) Applies only to model D-10.
**Dimensions in mm**

**Electrical connection**
Threaded connection with 1.5 m cable and 9-pin Sub-D connector
IP67 per IEC 60529 (on the instrument side)

**Case**

**Process connections for model D-10**

- G 1/2
  - Order code: GD

- G 1/4
  - Order code: GB

- 1/2 NPT
  - Order code: ND
  - According to "Nominal dimensions for US standard tapered pipe thread NPT"

- 1/4 NPT
  - Order code: NB
  - According to "Nominal dimensions for US standard tapered pipe thread NPT"

**Others on request**

**Process connections for model D-11, flush**

- G 1
  - 0 ... 0.25 to 0 ... 1.6 bar
  - Order code: 85

- G 1/2
  - > 1.6 bar
  - Order code: 86

For information on tapped holes and welding sockets, see Technical information IN 00.14 at www.wika.com
Electrical connection

Sub-D connector

<table>
<thead>
<tr>
<th>Sub-D connector on PC</th>
<th>Sub-D socket on pressure sensor</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 2 3 4 5 6 7 8 9</td>
<td></td>
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</tbody>
</table>

Pressure sensor

The pressure sensor is supplied with power via the RTS and DTR pins of the PC interface.

The maximum permissible cable length between pressure sensor and PC is 3 m.

Accessories

<table>
<thead>
<tr>
<th>Description</th>
<th>Order no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adapter for stabilising the RS-232 interface for operation of the pressure sensor on a laptop/notebook</td>
<td>7429407</td>
</tr>
<tr>
<td>USB serial converter for converting a USB signal into an RS-232 signal</td>
<td>2470327</td>
</tr>
</tbody>
</table>

Communication software (included in delivery)

Functions

- Display of pressure and temperature (value/graphic)
- Storage of the measured values
- Adjustment of zero point/span