

# Pressure Transmitters

For Precision Measurement  
With Digital Output RS 232

## TRONIC LINE

Standard Series • Model D-10  
Flush Diaphragm Series • Model D-11

- Pressure ranges from 0 ... 250 mbar to 0 ... 1,000 bar
- Linearity  $\leq 0.1$  % (optional 0.05 %) of span
- No additional temperature error in the range 0 ... 50 °C
- Digital data processing
- Wetted parts and case of stainless steel
- Digital output RS 232
- Wiring with plug (9-pin SUB-D plug)
- Communication software Easy Com 2.0 for display, zero point adjustment and data logging for pressure and temperature
- Optional calibration software Easy Cal Light

### General features

These pressure transmitters with accuracies of 0.1 % (or 0.05%) have been designed to enable direct communication to a PC, which is especially required in the field of test, calibration and service technology. The pressure transmitter's power supply is taken directly from the RS 232-interface of the PC.

The digital data processing of the precision pressure transmitter ensures excellent values regarding linearity and repeatability. System-related temperature errors occurring usually in pressure measuring instruments are compensated by the temperature sensor integrated in the process connection and the digital data processing via microprocessor. This leads to a total temperature error of  $\leq 0.1$  % in the range of 0 ... 50 °C.

All wetted parts are made of stainless steel and completely welded to exclude possible conflict between the sealing material and the pressure medium. The durable case is also made of stainless steel and provides IP 67 degree of protection.

The newly developed communication software Easy Com 2.0, which is included in delivery, allows not only the display of pressure and temperature but also the storage of the measuring data for pressure and temperature (data logger function) as well as an easy adjustment of zero point and span. The D-1X pressure transmitters also communicate as working standard through the optional Easy Cal Light software. With it, simple calibration for internal test monitoring can be accomplished.

The models of series D-11 with their flush diaphragm are particularly suitable for the measurement of media that is highly viscous, crystallizing or contains particulates. Pressure transmitters with flush diaphragm are available for the pressure ranges of 0 ... 250 mbar to 0 ... 600 bar.



### Supplementary data sheet:

- Pressure Transmitters for precision measurement with analog signal outputs (see data sheet PE 81.32)

Typ P-1X

- Calibration Software for mechanical and electronic pressure measurement (see data sheet PE 84.92)

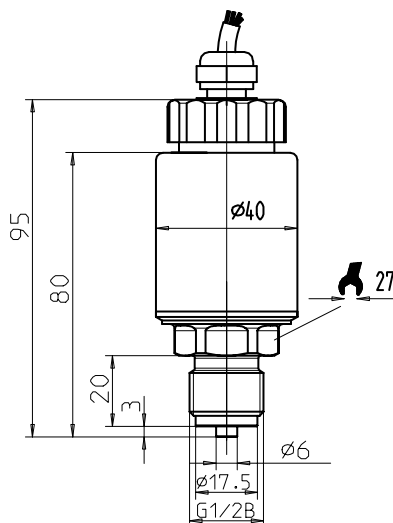
Easy Cal Light

| Specifications                                                         |                | Model D-10 and Model D-11                                                                                                                                               |     |     |    |     |     |    |    |    |    |                 |     |     |     |      |      |      |      |      |
|------------------------------------------------------------------------|----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|-----|----|-----|-----|----|----|----|----|-----------------|-----|-----|-----|------|------|------|------|------|
| Pressure ranges                                                        | bar            | 0.25                                                                                                                                                                    | 0.4 | 0.6 | 1  | 1.6 | 2.5 | 4  | 6  | 10 | 16 | 25              | 40  | 60  | 100 | 160  | 250  | 400  | 600  | 1000 |
| Over pressure safety                                                   | bar            | 1.6                                                                                                                                                                     | 1.6 | 2.4 | 4  | 6.4 | 10  | 16 | 24 | 35 | 64 | 50              | 80  | 120 | 200 | 320  | 500  | 800  | 1200 | 1500 |
| Burst pressure                                                         | bar            | 2                                                                                                                                                                       | 2   | 6   | 10 | 10  | 16  | 20 | 35 | 35 | 80 | 250             | 400 | 550 | 800 | 1000 | 1200 | 1700 | 2400 | 3000 |
|                                                                        |                | {absolute pressure: 0 ... 0.25 bar abs to 0 ... 16 bar abs}                                                                                                             |     |     |    |     |     |    |    |    |    |                 |     |     |     |      |      |      |      |      |
|                                                                        |                | {special pressure range 800 ... 1200 mbar abs}, {other on request}                                                                                                      |     |     |    |     |     |    |    |    |    |                 |     |     |     |      |      |      |      |      |
|                                                                        |                | {± pressure ranges: minimum span 400 mbar, e.g. -200 mbar ... +200 mbar}                                                                                                |     |     |    |     |     |    |    |    |    |                 |     |     |     |      |      |      |      |      |
| Pressure connection                                                    |                | G ½ B per DIN 16 288 (G ¼ B, ½ NPT) {other connections on request}}                                                                                                     |     |     |    |     |     |    |    |    |    |                 |     |     |     |      |      |      |      |      |
| • Model D-10                                                           |                | G1 B flush diaphragm with o-ring (pressure ranges: 0 ... 0.25 to 0 ... 1.6 bar)                                                                                         |     |     |    |     |     |    |    |    |    |                 |     |     |     |      |      |      |      |      |
| • Model D-11                                                           |                | G ½ B flush diaphragm with o-ring (pressure ranges: 0 ... 2.5 to 0 ... 600 bar)                                                                                         |     |     |    |     |     |    |    |    |    |                 |     |     |     |      |      |      |      |      |
|                                                                        |                | {weld-on socket for flush diaphragm units with connection G ½ B, G 1 B}                                                                                                 |     |     |    |     |     |    |    |    |    |                 |     |     |     |      |      |      |      |      |
| Materials                                                              |                | stainless steel 1.4571, 2.4711 (≥ 25 bar) (other materials see WIKA chemical seal programm)                                                                             |     |     |    |     |     |    |    |    |    |                 |     |     |     |      |      |      |      |      |
| • wetted parts                                                         |                | Only for flush diaphragm models: NBR {EPDM, Viton}                                                                                                                      |     |     |    |     |     |    |    |    |    |                 |     |     |     |      |      |      |      |      |
| • o-ring                                                               |                | stainless steel 1.4571                                                                                                                                                  |     |     |    |     |     |    |    |    |    |                 |     |     |     |      |      |      |      |      |
| • case                                                                 |                | Synthetic oil (only for pressure ranges up to 0 ... 16 bar or flush diaphragm units)                                                                                    |     |     |    |     |     |    |    |    |    |                 |     |     |     |      |      |      |      |      |
| internal transmission fluid                                            |                | {halocarbon oil for oxygen applications <sup>1)</sup> }                                                                                                                 |     |     |    |     |     |    |    |    |    |                 |     |     |     |      |      |      |      |      |
|                                                                        |                | {listed by FDA for food industry}                                                                                                                                       |     |     |    |     |     |    |    |    |    |                 |     |     |     |      |      |      |      |      |
| Power supply U <sub>s</sub>                                            | DC V           | via RS 232-interface                                                                                                                                                    |     |     |    |     |     |    |    |    |    |                 |     |     |     |      |      |      |      |      |
|                                                                        |                | When connecting the D-1X to a notebook/laptop computer, the minimum power supply of the RS 232 interface must be secured with an adapter (can be ordered as an option). |     |     |    |     |     |    |    |    |    |                 |     |     |     |      |      |      |      |      |
| Output signal                                                          |                | RS 232 (8N1/9600 Baud)                                                                                                                                                  |     |     |    |     |     |    |    |    |    |                 |     |     |     |      |      |      |      |      |
|                                                                        |                | <b>3 adjustable modes of operation:</b>                                                                                                                                 |     |     |    |     |     |    |    |    |    |                 |     |     |     |      |      |      |      |      |
|                                                                        |                | • Pressure and temperature value on request from host system                                                                                                            |     |     |    |     |     |    |    |    |    |                 |     |     |     |      |      |      |      |      |
|                                                                        |                | • cyclic pressure output, time interval adjustable 10 ms ... 10 min                                                                                                     |     |     |    |     |     |    |    |    |    |                 |     |     |     |      |      |      |      |      |
|                                                                        |                | • cyclic pressure and temperature output, time interval adjustable 10 ms ... 10 min                                                                                     |     |     |    |     |     |    |    |    |    |                 |     |     |     |      |      |      |      |      |
|                                                                        |                | Resolution pressure value: 50,000 digits, temperature value 0.5 K                                                                                                       |     |     |    |     |     |    |    |    |    |                 |     |     |     |      |      |      |      |      |
| Adjustability                                                          |                |                                                                                                                                                                         |     |     |    |     |     |    |    |    |    |                 |     |     |     |      |      |      |      |      |
| • Zero point                                                           | %              | -5 ... +10 {adjustment via software Easy Com 2.0}                                                                                                                       |     |     |    |     |     |    |    |    |    |                 |     |     |     |      |      |      |      |      |
| • Span                                                                 | %              | -50 ... +5 {adjustment via software Easy Com 2.0}                                                                                                                       |     |     |    |     |     |    |    |    |    |                 |     |     |     |      |      |      |      |      |
| internal measuring rate                                                | Hz             | 100                                                                                                                                                                     |     |     |    |     |     |    |    |    |    |                 |     |     |     |      |      |      |      |      |
| warm-up time                                                           | min            | < 10                                                                                                                                                                    |     |     |    |     |     |    |    |    |    |                 |     |     |     |      |      |      |      |      |
| Accuracy *                                                             | % of span      | ≤ 0.1 in the range 0 ... +50 °C {≤ 0.05 at 20 °C <sup>2)</sup> }                                                                                                        |     |     |    |     |     |    |    |    |    |                 |     |     |     |      |      |      |      |      |
| (including linearity, hysteresis and repeatability)                    |                |                                                                                                                                                                         |     |     |    |     |     |    |    |    |    |                 |     |     |     |      |      |      |      |      |
| Hysteresis                                                             | % of span      | ≤ 0.04                                                                                                                                                                  |     |     |    |     |     |    |    |    |    |                 |     |     |     |      |      |      |      |      |
| Repeatability                                                          | % of span      | ≤ 0.03                                                                                                                                                                  |     |     |    |     |     |    |    |    |    |                 |     |     |     |      |      |      |      |      |
| 1-year stability                                                       | % of span      | ≤ 0.1 (at reference conditions)                                                                                                                                         |     |     |    |     |     |    |    |    |    |                 |     |     |     |      |      |      |      |      |
| Permissible temperature of                                             |                |                                                                                                                                                                         |     |     |    |     |     |    |    |    |    |                 |     |     |     |      |      |      |      |      |
| • medium                                                               | °C             | -20 ... +80 {other on request}                                                                                                                                          |     |     |    |     |     |    |    |    |    | - 4 ... +176 °F |     |     |     |      |      |      |      |      |
| • ambient                                                              | °C             | -20 ... +80}                                                                                                                                                            |     |     |    |     |     |    |    |    |    | - 4 ... +176 °F |     |     |     |      |      |      |      |      |
| • storage                                                              | °C             | -40 ... +85                                                                                                                                                             |     |     |    |     |     |    |    |    |    | -40 ... +185 °F |     |     |     |      |      |      |      |      |
| Compensated temp. range                                                | °C             | -20 ... +80                                                                                                                                                             |     |     |    |     |     |    |    |    |    | + 4 ... +176 °F |     |     |     |      |      |      |      |      |
| Temperature coefficients in compensated temp range:                    |                |                                                                                                                                                                         |     |     |    |     |     |    |    |    |    |                 |     |     |     |      |      |      |      |      |
| • mean TC of zero                                                      | % of span /10K | ≤ 0.1 (the temperature related deviations in the range 0 ... +50 °C (32 ... 122 °F) are already covered by the accuracy above)                                          |     |     |    |     |     |    |    |    |    |                 |     |     |     |      |      |      |      |      |
| • mean TC of range                                                     | % of span /10K | ≤ 0.1                                                                                                                                                                   |     |     |    |     |     |    |    |    |    |                 |     |     |     |      |      |      |      |      |
| α-conformity                                                           |                | Interference emission and immunity see EN 61 326; declaration of conformity on request                                                                                  |     |     |    |     |     |    |    |    |    |                 |     |     |     |      |      |      |      |      |
| Shock resistance                                                       | g              | < 100 according to IEC 770                                                                                                                                              |     |     |    |     |     |    |    |    |    |                 |     |     |     |      |      |      |      |      |
| Vibration resistance                                                   | g              | < 5 according to IEC 770                                                                                                                                                |     |     |    |     |     |    |    |    |    |                 |     |     |     |      |      |      |      |      |
| Electrical connection                                                  |                | flying lead inclusive 9-pin SUB-D plug, cable length 1.5 m                                                                                                              |     |     |    |     |     |    |    |    |    |                 |     |     |     |      |      |      |      |      |
| Software                                                               |                | communication software Easy Com 2.0 (for WIN 95, WIN 2000, Windows NT 4.0)                                                                                              |     |     |    |     |     |    |    |    |    |                 |     |     |     |      |      |      |      |      |
|                                                                        |                | {calibration software Easy Cal Light}                                                                                                                                   |     |     |    |     |     |    |    |    |    |                 |     |     |     |      |      |      |      |      |
| Ingress protection acc to. EN 60 529/IEC529                            |                | IP 67                                                                                                                                                                   |     |     |    |     |     |    |    |    |    |                 |     |     |     |      |      |      |      |      |
| Weight                                                                 | kg             | ca. 0.3                                                                                                                                                                 |     |     |    |     |     |    |    |    |    |                 |     |     |     |      |      |      |      |      |
| Dimensions                                                             |                | see drawings                                                                                                                                                            |     |     |    |     |     |    |    |    |    |                 |     |     |     |      |      |      |      |      |
| Items in curved brackets { } are optional extras for additional price. |                |                                                                                                                                                                         |     |     |    |     |     |    |    |    |    |                 |     |     |     |      |      |      |      |      |

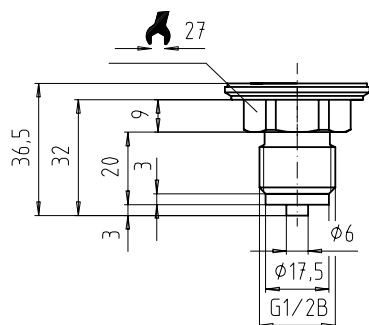
- 1) The oxygen version must not be operated under medium temperatures higher than 60 °C (140 °F)  
The oxygen version cannot be manufactured for negative pressure ranges and for absolute pressure ranges < 1 bar abs.
- 2) Not for ± pressure ranges
- \* Calibrated in vertical mounting position with the pressure connection facing down

## Dimensions in mm

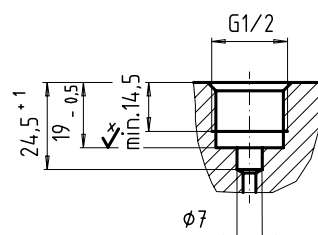
## Case



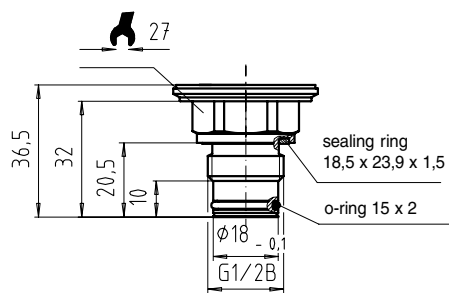
## Pressure connection G 1/2 B



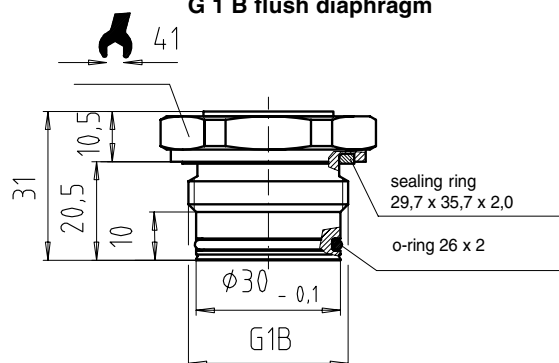
## Socket for pressure connections



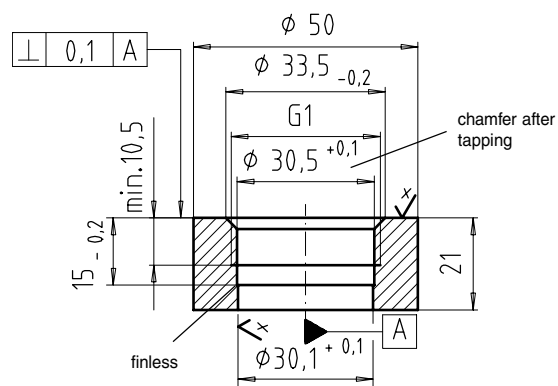
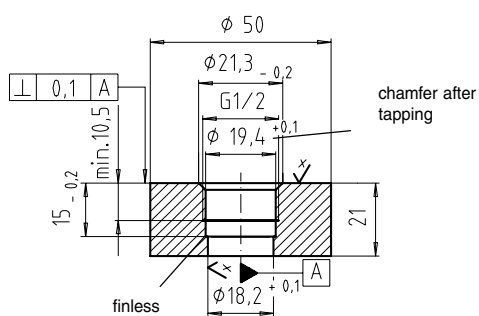
## Pressure connection G 1/2 B flush diaphragm



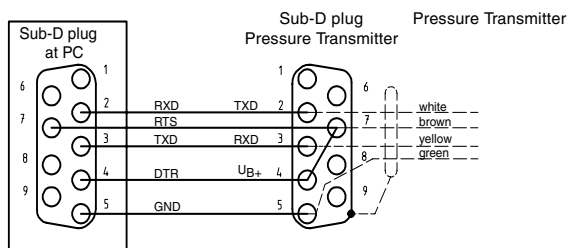
## G 1 B flush diaphragm



## Weld-on adaptor resp. socket for flush diaphragm pressure connection



## Wiring details



The pressure transmitter is supplied via the pins RTS and DTR of the PC interface.

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

## Communication software



## Calibration software (optional)



### Functions:

- Pressure and temperature display (value / graphic)
- Data logging of the measuring data
- Adjustment zero point and span
- Memory of minimum and maximum values

### Functions:

- Fully automatic calibration
- Certificate creation per DIN 10 204-3.1B
- Calibration steps generation per DIN EN 837-1
- Calibration data storage

Specifications and dimensions given in this document represent the state of engineering at the time of printing. Modifications may be carried out and materials specified may be replaced by others without prior notice.



35 Vantage Point Drive // Rochester, NY 14624 // Call 1.800.800.5001