

Precision Pressure Transmitter



The pressure transmitter x|act i has been developed for highest requirements in process industry.

Basic element is a piezoresistive pressure sensor characterized by high signal stability. Linearisation of the sensor signal and compensation of the thermal error is done by intelligent digital electronics.

Diverse process connections and chemical seals for food, chemical, and pharmaceutical industries are available. All media wetted parts are stainless steel 1.4435 (316L).

The x|act i can be delivered optionally with stainless steel ball housing or with a robust powder-coated aluminium die cast case.

Electrical output is a 4 ... 20 mA 2-wire signal; optionally HART® communication is available.

The standard LCD display module is rotatable in the housing and protected by a laminated safety glass window. Complete configuration can be made via push buttons on the display module.



x|act i

Precision Pressure Transmitter with LCD Display for Processing Industry

- flush diaphragm
- for food industry, Pharmaceutical, Process and petrochemical industry
- media temperature up to 300 °C
- optional HART® communication
- stainless steel ball housing or aluminium die cast case
- nominal pressure ranges from 0 ... 170 mbar up to 0 ... 35 bar
- Adjustable zero offset up to 0-80% FSO, 10:1 turndown of pressure range and damping from 0 – 99.9 seconds

- Accuracy: 0.05 % FSO BFSL (0.1 % FSO IEC 60770)
- thermal error in compensated range of -20 ... 80 °C: 0.01% FSO/°C including zero & span
- output signal 4 ... 20 mA / 2-wire - HART® Interface optional
- integrated LCD display protected by laminated safety glass
- full configuration via push buttons in the display module

Characteristics



x|act i
Precision Pressure Transmitter

Input pressure ranges

| | | | | | | |
|--------------------------|-------|-----------------------|------------|---------|---------|----------|
| Nominal pressure gauge | [bar] | -1 ... 0 ¹ | 0.17 | 1 | 7 | 35 |
| Setting gauge | [bar] | - | 0.1...0.17 | 0.1...1 | 0.7...7 | 3.5...35 |
| Nominal pressure abs. | [bar] | - | - | 1 | 7 | 35 |
| Setting abs. | [bar] | - | - | 0.4...1 | 0.7...7 | 3.5...35 |
| Permissible overpressure | [bar] | 3 | 1 | 3 | 20 | 100 |

On customer request we adjust the devices on the popular pressure ranges (gauge starting at 0.1 bar, abs. starting at 0.4 bar): 0.10 / 0.16 / 0.25 / 0.4 / 0.6 / 1.6 / 2.5 / 4 / 6 / 10 / 16 / 25 bar ; special pressure ranges e.g. 0.2...1.8 bar with additional charge possible

Output signal / Supply

| | | |
|--|---|--|
| Standard | 2-wire: 4 ... 20 mA / V _S = 10 ... 30 V _{DC} | Ex version: V _S = 10 ... 28 V _{DC} |
| | configuration of the following parameters via display module possible | |
| | offset: 0 ... 80 % FSO | span: 1 : 10 |
| | | damping: 0 ... 99.9 s |
| Option HART [®] | as standard, but with additional HART [®] communication for configuration the x act i with option HART [®] is delivered in Ex version as standard | |
| Accuracy ² | ≤ ± 0.1 % FSO | |
| Permissible load | standard: R _{max} = [(V _S - V _{Smin}) / 0.02] Ω | HART [®] : R _{min} = 250 Ω |
| Influence effects | supply: 0.05 % FSO / 10 V | permissible load: 0.05 % FSO / kΩ |
| Damping (only HART [®] version) | reaction time: 300 ms additional electronically damping up to 99.9 s adjustable | |

Thermal errors (Offset and Span)

| | |
|----------------------|---|
| Thermal error | ± (0.1 x nominal range / adjusted range) % FSO / 10 K |
| in compensated range | -20 ... 80 °C |

Electrical protection

| | |
|-----------------------------------|---|
| Short-circuit protection | permanent |
| Reverse polarity protection | no damage, but also no function |
| Electromagnetic compatibility | emission and immunity according to EN 61326 |
| Option Ex protection AX12-x act i | II 1 G EEx ia IIC T4 safety technical maximum values: V _i = 28 V, ΣI _i = 93 mA, ΣP _i = 660 mW |

Display

| | |
|--------------------|---|
| Type | LCD display, visible range 32.5 x 22.5 mm |
| Display for values | 5-digit, 7-segment, digit size 8 mm, range of indication ± 9999 |
| Additional display | 8-digit, 14-segment, digit size 5 mm |
| Bargraph | 52 segments |
| Accuracy | 0.1 % ± 1 digit |

Mechanical stability

| | |
|-----------|---------------------------|
| Vibration | 10 g RMS (20 ... 2000 Hz) |
| Shock | 100 g / 11 ms |

Permissible temperatures

| | |
|---------------------------|--------------------------------|
| Medium | -25 ... 125 °C ^{1, 3} |
| Electronics / environment | -25 ... 85 °C |
| Storage | -40 ... 85 °C |

Housing types

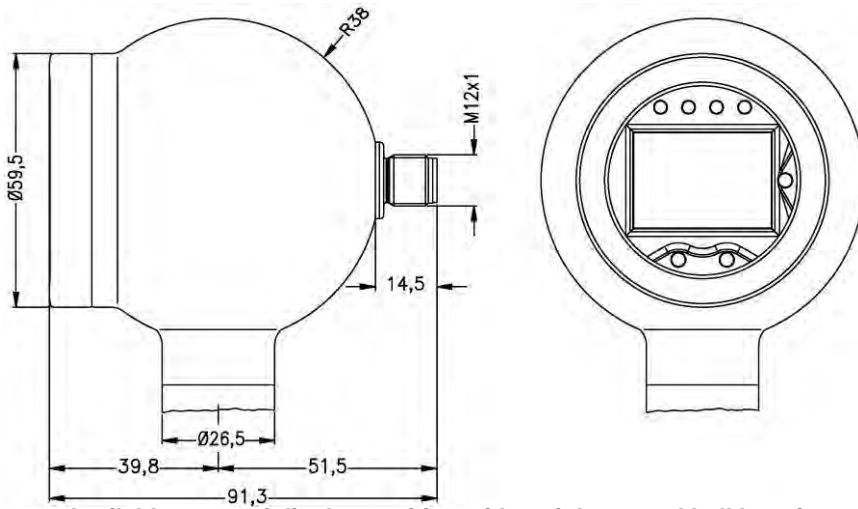
¹ for vacuum ranges max. medium temperature is 70 °C

² accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability) relating to nominal range

³ with optional cooling element its maximum permissible temperature is valid

Pressure - Temperature - Level - Flow - Analytical - Control - Indication - Logging

Stainless steel ball housing



Available types of display position with stainless steel ball housing



side display

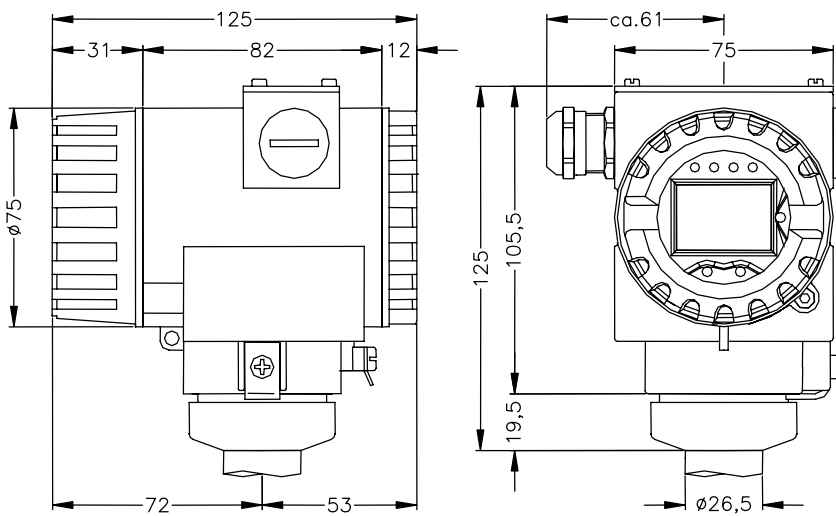


45° display



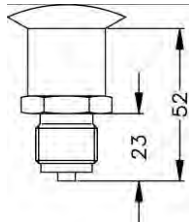
top display

Aluminium die cast case

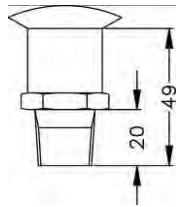


Mechanical connection

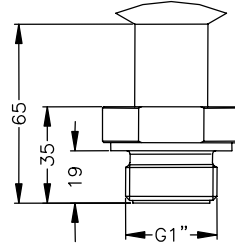
Inch threads



G 1/2" EN 837

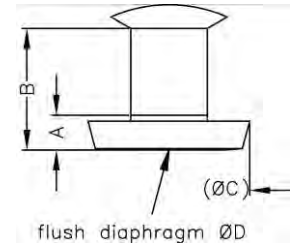


1/2" NPT



G1" flush (DIN 3852)

Dairy pipe⁴

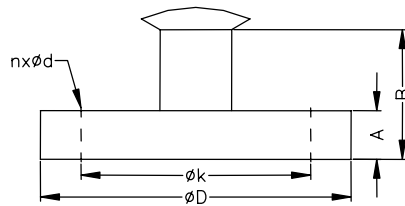


flush diaphragm ØD

dimensions in mm

| size | DN 25 | DN 40 | DN 50 |
|------|-------|-------|-------|
| A | 14 | 23 | 23.5 |
| B | 44 | 23 | 23.5 |
| C | 44 | 56 | 68.5 |
| D | 24 | 32 | 45 |

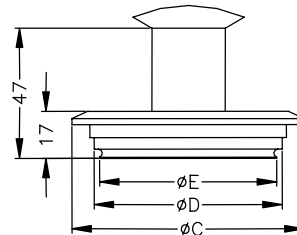
Flange



dimensions in mm

| size | DN25/PN40 | DN50/PN16 | DN80/PN16 |
|------|-----------|-----------|-----------|
| D | 115 | 165 | 200 |
| k | 85 | 125 | 160 |
| A | 18 | 18 | 20 |
| B | 48 | 48 | 50 |
| n | 4 | 4 | 8 |
| d | 14 | 18 | 18 |

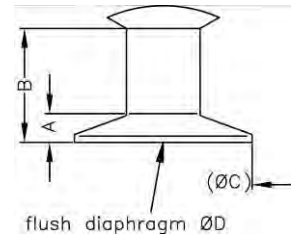
Varivent



dimensions in mm

| size | DN 40/50 |
|------|----------|
| C | 84 |
| D | 68 |
| E | 64 |

Clamp

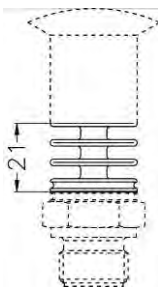


flush diaphragm ØD

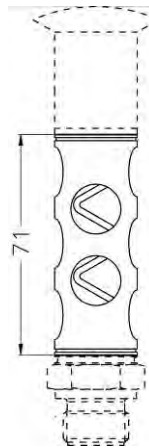
dimensions in mm

| size | 1" | 1 1/2" | 2" |
|------|------|--------|----|
| A | 11 | 11 | 22 |
| B | 41 | 41 | 22 |
| C | 50.5 | 50.5 | 64 |
| D | 24 | 32 | 45 |

cooling element up to 150° C



cooling element up to 300° C



⁴ The cup nut for dairy pipe is included in the delivery. (already pre-assembled)

Pressure - Temperature - Level - Flow - Analytical - Control - Indication - Logging

Electrical connections

| | |
|------------------------------|--|
| Stainless steel ball housing | M12x1 4pin / others on request |
| Aluminium die cast case | terminal clamps in clamping chamber; cable gland M20x1.5 (Ø-range 5 ... 10 mm) |

Filling fluids

| | |
|----------------------|--|
| Standard | silicon oil |
| Options ⁵ | food compatible oil / Halocarbon / others on request |

Materials

| | |
|----------------------|--|
| Pressure port | stainless steel 1.4435 (316L) |
| Housing | stainless steel 1.4301 (304) / aluminium die cast, powder-coated |
| Viewing glass | laminated safety glass |
| Seals (media wetted) | inch thread: FKM clamp, dairy pipe, flange, Varivent: none others on request; delivery of process seals on request |
| Diaphragm | stainless steel 1.4435 (316L) / Hastelloy / others on request |
| Media wetted parts | pressure port, seals, diaphragm |

Miscellaneous

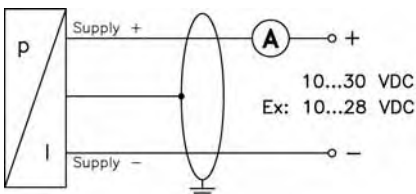
| | |
|-----------------------|--|
| current consumption | max. 25 mA |
| Ingress protection | IP 67 |
| Weight | min. 400 g (depending of process connection) |
| Installation position | any ⁶ |
| Operational life | > 100 x 10 ⁶ pressure cycles |

Pin configuration

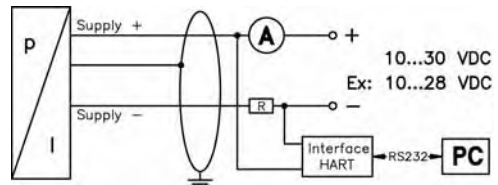
| Electrical connection | | stainless steel ball housing | | aluminium die cast case |
|-----------------------|----------|------------------------------|---------------------------|-------------------------|
| | | M12x1 (4-pin) | cable colours (DIN 47100) | terminal clamp |
| 2-wire-system | Supply + | 1 | white | Vs+ |
| | Supply - | 3 | brown | Vs- |
| | Ground | plug housing | cable shield | ground clamps |

Wiring diagram

2-system (current)



2-system (current) HART®



⁵ not possible with mechanical connection G1/2" EN 837 and 1/2" NPT

⁶ Pressure transmitters are calibrated in a vertical position with the pressure port connection down. If this position is changed on installation there can be slight deviations in the zero point for pressure ranges ≤ 1 bar. Therefore installation position should be specified.

