

FOR LIQUIDS

NIVOPRESS D

HYDROSTATIC LEVEL TRANSMITTERS



3 YEARS WARRANTY @ NIVELCO – WHERE ELSE?

NIVELCO

LEVEL TRANSMITTERS

NIVOPRESS D HYDROSTATIC LEVEL TRANSMITTERS FOR LIQUIDS

MAIN FEATURES

- 0.25% accuracy
- Gauge or absolute pressure transmitter
- Piezoresistive sensor with stainless steel flush diaphragm
- Wide pressure range selection
- Temperature compensation
- HART communication
- Plug-in display
- Wide variety of process connections
- IP 65 protection
- Ex version

APPLICATIONS

- Liquids and masses in tanks and vessels
- Chemicals with dense vapour or gas layers above the surface
- Foaming liquids
- Viscous or corrosive materials



GENERAL DESCRIPTION

NIVOPRESS D hydrostatic level- and pressure transmitters operate in 2-wire systems and convert relative or absolute pressure (input signal) into 4-20 mA (output signal). The piezoresistive sensor measures the hydrostatic pressure and it compares the water head with the actual atmospheric pressure. The sensor is protected by a stainless steel flush diaphragm which transfers the pressure value to the piezoresistive sensor through silicon oil. Intelligent electronics provides on-site programming with SAP-200 plug-in display or remote programming with HART communication. Intrinsically safe (Ex ia approved) models are available for use in hazardous environments. NIVOPRESS D hydrostatic gauge pressure transmitters are suitable for level- and pressure measurement tasks in tanks, vessels and pipes especially in food and beverages industry (for example milk and any other food dollops) applications. The flat surface of the diaphragm avoids the risk of material build up and the maximum medium temperature of 125 °C (275 °F) allows proper (CIP) cleaning required by the regular cleaning processes of the food industry and similar hygienic applications.

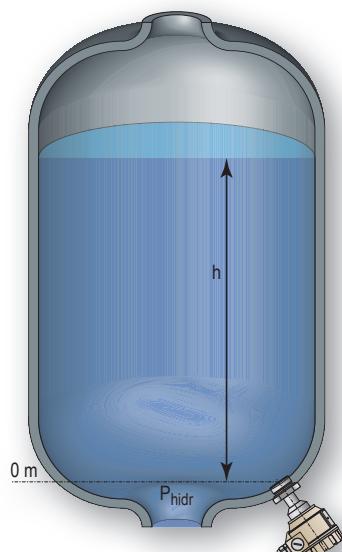
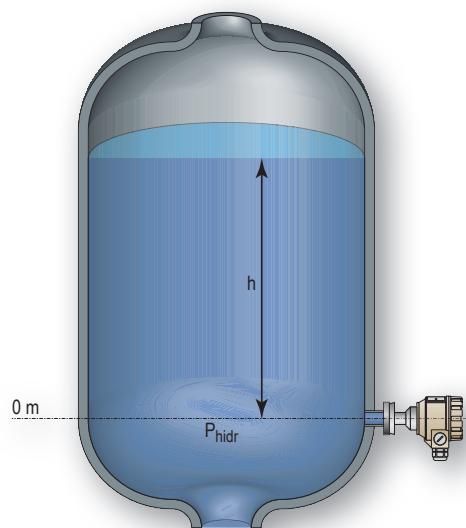
OPERATION

PRINCIPLE OF LEVEL MEASURING BY HYDROSTATIC PRESSURE:

Providing constant density the level depends on the pressure head.

$$\begin{aligned} P_{\text{hidr}} &= 10^{-5} \rho \cdot g \cdot h \\ \downarrow \\ h &= 10^5 \frac{P_{\text{hidr}}}{\rho \cdot g} \\ \downarrow \\ \text{Possible maximum value of "h": } h_{\max} &= 10^5 \end{aligned}$$

P_{hidr} [bar] = hydrostatic pressure
 ρ [kg/m³] = density of the medium
 g [m/s²] = gravitational acceleration
 h [m] = distance between middle of the diaphragm and level of the medium
 $P_{\text{hidr},\max}$ = highest pressure value set in the default



TECHNICAL DATA

| Type | NIVOPRESS D-500 | NIVOPRESS D-600 |
|-----------------------------------|--|---|
| Measured process value | | level, pressure |
| Sensor | Piezoresistive silicon sensor, with stainless steel flush diaphragm | |
| System | | 2-wire |
| Power supply | | 10 ... 36 V DC |
| Measurement range | -1 ... 400 bar bar g (-14.5 ... 5800 psi g) (as per order codes) | |
| Overpressure | 0.5 ... 600 bar g (7.25 ... 8700 psi g) (as per order codes) | |
| Downscale rate | | ≈ 1 : 2 |
| Zero point offset | | 50% of the measurement range |
| Accuracy (linearity error) | $p > 0.4 \text{ bar g}$ (5.8 psi g) $\pm 0.25\%$ $p \leq 0.4 \text{ bar g}$ (5.8 psi g) $\pm 0.5\%$ | |
| Output | Analogue Display Digital communication | 4–20 mA SAP-203 - 6-digit plug-in LCD display 4–20 mA + HART |
| Ambient temperature | $p < 100 \text{ bar g}$ (1450 psi g): 0 °C ... +70 °C (32 °F ... 158 °F) Ex type: see „Special data for Ex certified models“ table | -30 °C ... +70 °C (-22 °F ... +158 °F), with display: -25 °C ... +70 °C (-13 °F ... +158 °F) |
| Range of temperature compensation | $p < 100 \text{ bar g}$ (1450 psi g): 0 °C ... +70 °C (32 °F ... 158 °F) | $p \leq 0.4 \text{ bar g}$ (5.8 psi g): 0 °C ... 50 °C (32 °F ... 122 °F) |
| Medium temperature | | -25 °C ... +125 °C (-13 °F ... 257 °F) |
| Material of wetted parts | Protection diaphragm Process connection Sealing | DIN 1.4435 (316L) stainless steel $p < 100 \text{ bar g}$ (1450 psi g): Viton; $p > 100 \text{ bar g}$ (1450 psi g): NBR; on special request: EPDM |
| Pressure transmitting medium | | Silicon oil, on special request: food industry compatible oil |
| Housing material | Paint coated aluminium | Plastic (PBT) |
| Process connection | | As per order codes |
| Electrical connection | 2 x M20x1.5 plastic cable glands, for 6...12 mm (0.25 ... 0.5 inch) cable + Ex type: see „Special data for Ex certified models“ table | 2 x NPT ½ " internal thread for cable protective pipe terminal block for 0.5...1.5 mm² (AWG 20 ... AWG 15) wire cross section |
| Electrical protection | | Class III. |
| Ingress protection | | IP 65 |
| Explosion protection | See „Special data for Ex certified models“ table | — |
| Weight | ≈ 2 kg (4.4 lb) | ≈ 1.6 kg (3.5 lb) |

SPECIAL DATA FOR EX CERTIFIED MODELS

| Type | NIVOPRESS D□□-500 |
|-----------------------------|--|
| Protection type | Intrinsically safe |
| Ex marking | ATEX © II 1G EEx ia IIC T6...T4 |
| Intrinsically safe data | $U_{max} = 30 \text{ V}$, $I_{max} = 140 \text{ mA}$, $P_{max} = 1 \text{ W}$, $C_i = 20 \text{ nF}$; $L_i = 0.2 \text{ mH}$ |
| Operation temperature range | Without display: -40 °C ... +70 °C (-40 °F ... +158 °F); With display: -25 °C ... +70 °C (-13 °F ... +158 °F) |

NIVOPRESS D IN SYSTEM WITH A PC

The instruments with HART output can be connected to a PC using an UNICOMM HART-USB modem. Max. 15 normal instruments can be connected to a single HART loop. All measured values can be visualized and/or the instruments can be remote programmed via digital HART communication. Applicable software: EView2 configuration software or NIVISION process visualization software.



WIRING

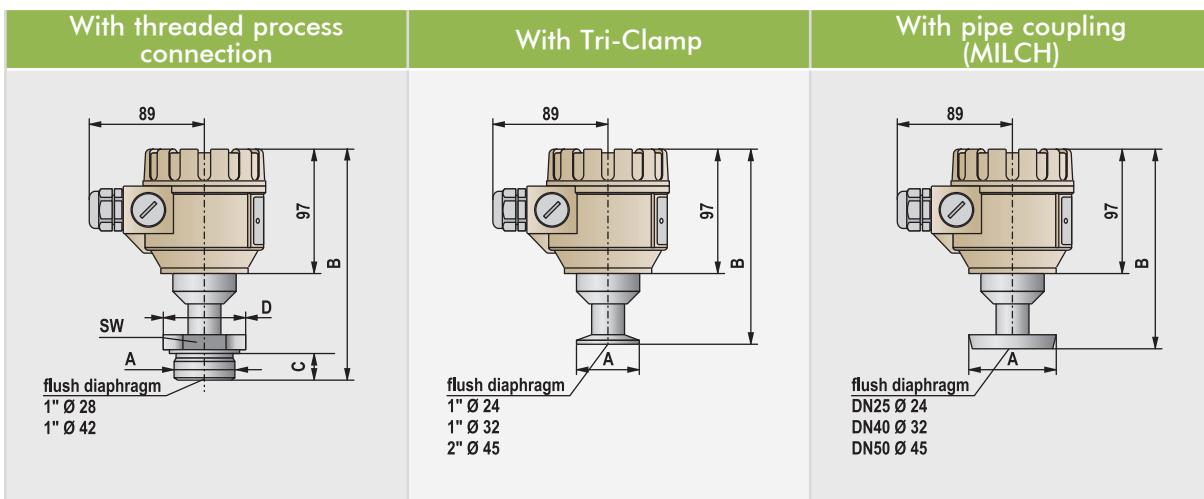


NIVOPRESS D IN HART MULTIDROP LOOP

The MultiCONT can handle a max. of 15 normal HART or max 4 Ex-proof HART capable NIVELCO transmitters. The digital (HART) information is processed, displayed and if needed it can be transmitted via RS485 communication line to a PC. Remote programming of the transmitters is also possible. Visualisation on PC can be accomplished with NIVISION process visualisation software.

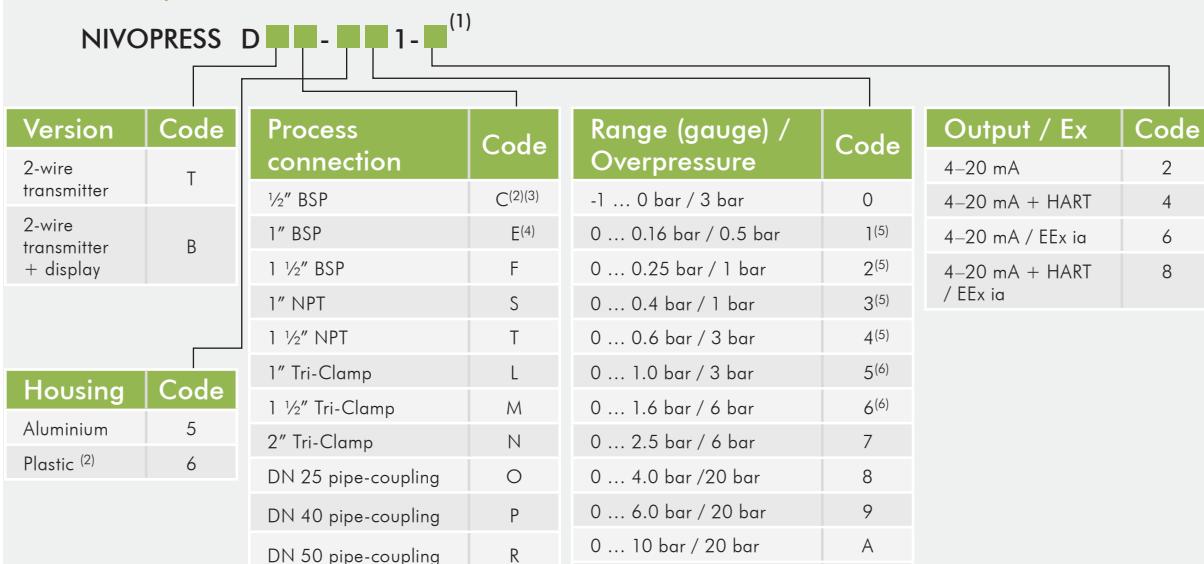


DIMENSIONS



ORDER CODES (NOT ALL COMBINATIONS AVAILABLE)

NIVOPRESS D hydrostatic level transmitters



| Accessories and auxiliary devices to order | |
|--|---------------------------------|
| SAP-203 | Plug-in LCD display unit |
| UNICOMM SAT-304 / SAK-305 | USB - HART / RS485 modem |
| UNICONT PGK-301 | Ex isolator power supply module |
| NIPOWER PPK-331 | 24V DC power supply |
| UNICONT PDF-501 | Universal loop display |
| SAS-303 | EView2 configuration software |

(1) The order code of an Export version should end in „Ex”

(2) Not available in Ex version

(3) only for $p \geq 2.5$ bar

(4) only for $p \geq 1$ bar

(5) only with min 1 1/2"

connection

(6) only with min 1" con

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