

FOR LIQUIDS

# NIVOPRESS D

HYDROSTATIC LEVEL TRANSMITTERS



**RA**  
RusAutomation

**NIVELCO**

3 YEARS WARRANTY @ NIVELCO – WHERE ELSE?

LEVEL TRANSMITTERS



**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 allows proper (CIP) cleaning required by the regular cleaning processes of the food industry and similar hygienic applications.

**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
- IP65 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

**CERTIFICATIONS**

- ATEX (Ex ia)



DT-500



SAP-203 display

**OPERATION**

Principle of level measuring by hydrostatic pressure:

Providing constant density the level depends on the pressure head.

$$P_{hydr} = 10^{-5} \rho \cdot g \cdot h$$

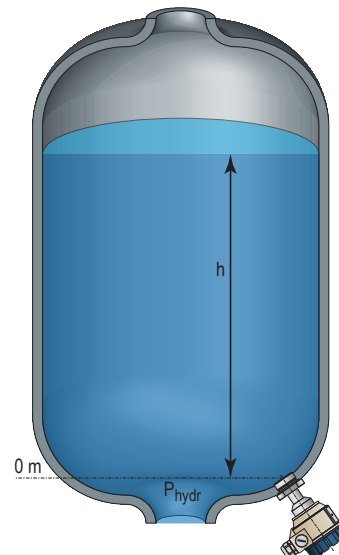
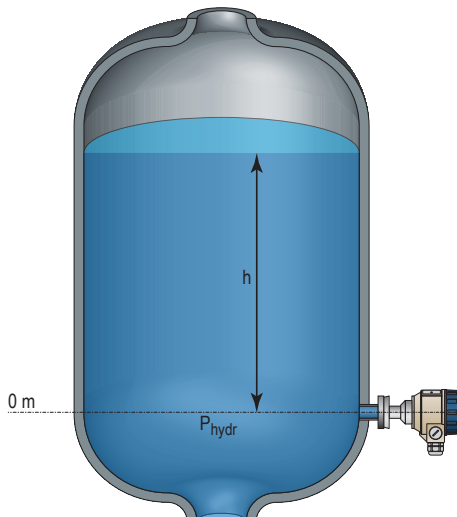
$$\downarrow$$

$$h = 10^5 \frac{P_{hydr}}{\rho \cdot g}$$

$$\downarrow$$

Possible maximum value of „h“:  $h_{max} = 10^5 \frac{P_{hydr,max}}{\rho \cdot g}$

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



## TECHNICAL DATA

Type	NIVOPRESS D-500 / D-700	NIVOPRESS D-600
Measured process value	Level, pressure	
Sensor	Piezoresistive silicium sensor, with stainless steel flush diaphragm	
System	2-wire	
Power supply	10 – 36 V DC	
Measurement range	-1 – 400 bar (as per order codes)	
Overpressure	0.5 – 600 bar (as per order codes)	
Downscale rate	~1:2	
Zero point offset	50% of the measurement range	
Accuracy (linearity error)	p > 0.4 bar: ±0.25%; p ≤ 0.4 bar: ±0.5%	
Output	Analogue	4 – 20 mA
	Display	SAP-203 - 6-digit plug-in LCD display
	Digital communication	4 – 20 mA + HART®
Ambient temperature	-40 °C ... +70 °C, with display: -25 °C ... +70 °C	-30 °C ... +70 °C, with display: -25 °C ... +70 °C,
	Ex type: see „Special data for Ex certified models” table	
Range of temperature compensation	p < 100 bar: 0 °C ... +70 °C p ≤ 0.4 bar: 0 °C ... 50 °C	
Medium temperature	-25 °C ... +125 °C	
Material of wetted parts	Protection diaphragm	1.4435 (316L) stainless steel
	Process connection	
	Sealing	
Pressure transmitting medium	Silicon oil, on special request: food industry compatible oil	
Housing material	Paint coated aluminium or stainless steel	Plastic (PBT)
Process connection	As per order codes	
Electrical connection	2x M20x1.5 plastic cable glands, for 6 – 12 mm cable + 2x NPT ½" internal thread for cable protective pipe terminal block for 0.5 – 1.5 mm² wire cross section	
Electrical protection	Class III	
Ingress protection	IP65	
Weight	~2 kg	~1.6 kg

## SPECIAL DATA FOR Ex CERTIFIED MODELS

Type	D□□-5□□-□ Ex / D□□-6□□-□ Ex
Protection type	Intrinsically safe
Ex marking	Ⓔ II 1 G Ex ia IIC T6 ... T4 Ga
Intrinsically safe data	U <sub>i</sub> ≤ 30 V; I <sub>i</sub> ≤ 100 mA; P <sub>i</sub> ≤ 0.75 W; C <sub>i</sub> ≤ 14 nF; L <sub>i</sub> ≤ 180 µH
Process temperature range	Without display: -40 °C ... +70 °C; With display: -25 °C ... +70 °C

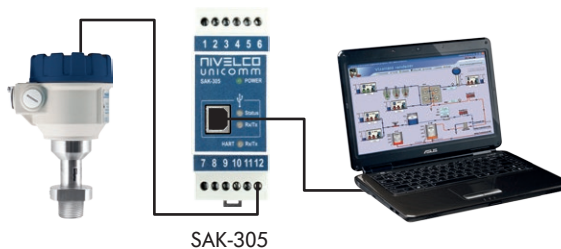
## NIVOPRESS D IN HART MULTIDROP LOOP

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.



## 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.



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