

NIVOPRESS D

HYDROSTATIC LEVEL TRANSMITTER

5 YEARS WARRANTY

NIVELCO

LEVEL TRANSMITTERS



NIVOPRESS D level transmitters operate in 2-wire systems that convert the relative pressure (*input signal*) into a direct current signal (*output signal*). The silicone oil (*cooking oil on request*) transmission fluid transmits the pressure value from the stainless steel diaphragm to the piezoresistive sensor of the transmitter — smart electronics and HART® communication feature local and remote programming. The transmitters are available in standard and non-sparking (*Ex ia*) versions.

The design of the **NIVOPRESS D** front diaphragm level transmitters are particularly suitable for level measuring tasks by measuring pressure at the bottom of the tank. The same design makes it an excellent instrument for food applications (*milk, pastes*). The smooth membrane surface and the maximum permissible process temperature of +125 °C (+257 °F) ensure hygienic cleaning in technologies that require regular cleaning and eliminate the risk of clogging. The device can be used for all level measurement tasks with atmospheric pressure above the liquid column.

FEATURES

- 0.25% accuracy
- Gauge or absolute pressure transmitter
- Piezoresistive sensor with stainless steel flush diaphragm
- Wide pressure range
- Temperature compensation
- HART® communication
- PACTware™ compatible
- Plug-in display
- Wide variety of process connections
- IP65
- Ex version
- 5 years warranty

OPERATION

Hydrostatic level measurement principle

Provided the density is constant, the level depends on the pressure head.

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

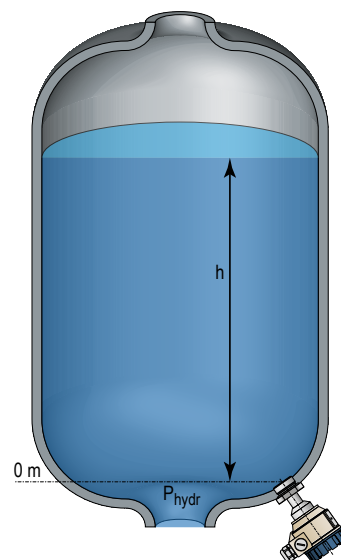
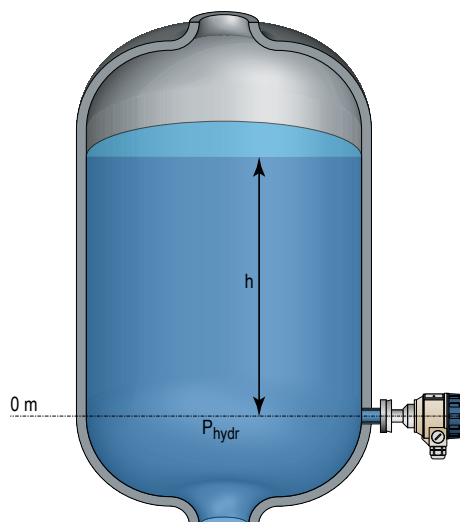
$$\downarrow$$

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

$$\downarrow$$

$$\text{Maximum possible value of „h“: } h_{\text{max}} = 10^5 \frac{P_{\text{hydr.max}}}{\rho \cdot g}$$

P_{hydr} [bar] = hydrostatic pressure
 ρ [kg/m³] = density of the medium
 g [m/s²] = gravitational acceleration
 h [m] = distance between the middle of the diaphragm and the level of the material
 $P_{\text{hydr.max}}$ = highest pressure limit



APPLICATIONS

- Liquids in tanks and vessels
- Chemicals with dense vapor or gas layers above the surface
- Foaming liquids
- Highly viscous and corrosive substances

CERTIFICATE

- ATEX (Ex ia G)



SAP-203 display



DT-500

TECHNICAL DATA

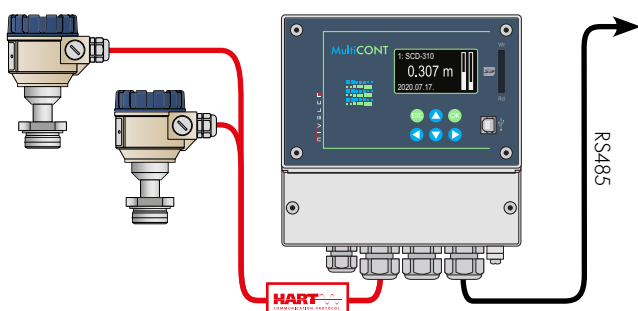
		D-500 / D-700	D-600
Measured Process Value		Level, pressure	
Sensor		Piezoresistive silicon sensor, with stainless steel flush diaphragm	
System		2-wire	
Power Supply		10...36 V DC	
Measuring Range		0...400 bar (0...5800 psi) (as per order code)	
Overpressure		0.5...600 bar (72.5...8700 psi) (as per order code)	
Downscale Rate		~1:2	
Zero Point Offset		50% of the measuring range	
Accuracy (Linearity Error)		$p > 0.4 \text{ bar (5.8 psi): } \pm 0.25\%$; $p \leq 0.4 \text{ bar: } \pm 0.5\%$	
Output	Analog	4...20 mA	
	Display	6-digit plug-in LCD display (SAP-203)	
	Digital Communication	HART®	
Ambient Temperature		-40...+70 °C (-40...+158 °F), with display: -25...+70 °C (-13...+158 °F)	-30...+70 °C (-22...+158 °F), with display: -25... +70 °C (-13... +158 °F),
		Ex variant: see Ex Information	
Range of Temperature Compensation		$p < 100 \text{ bar (1450 psi): } 0...+70 \text{ °C (+32...+158 °F)}$	$p \leq 0.4 \text{ bar (5.8 psi): } 0...+50 \text{ °C (+32...+122 °F)}$
Process Temperature		-25...+125 °C (-13...+257 °F)	
Material of Wetted Parts	Protection Diaphragm	1.4435 (316L) stainless steel	
	Process Connection		
	Seal		
		$p < 100 \text{ bar (1450 psi): Viton®}$; $p > 100 \text{ bar (1450 psi): NBR}$; EPDM is ordered separately	
Pressure Transmitting Medium		Silicone oil; food industry compatible oil is ordered separately	
Housing Material		Powder-coated aluminum or stainless steel	Plastic (PBT)
Process Connection		As per order code	
Electrical Connection		2× M20×1.5 plastic cable glands, for Ø6...12 mm (Ø0.25...0.5") cable diameter + Two internally threaded ½" NPT connection for protective pipes for 0.5...1.5 mm² (AWG20...15) wire cross section	
Electrical Protection		Class III	
Ingress Protection		IP65	
Weight		~2 kg (~4.4 lb)	~1.6 kg (~3.5 lb)

Ex INFORMATION

D□□-5□□-□ Ex / D□□-6□□-□ Ex	
Protection type	Intrinsic safety
Ex marking	II 1 G Ex ia IIC T6 ... T4 Ga
Intrinsic safety data	$U_i \leq 30 \text{ V}$; $I_i \leq 100 \text{ mA}$; $P_i \leq 0.75 \text{ W}$; $C_i \leq 14 \text{ nF}$; $L_i \leq 180 \text{ } \mu\text{H}$
Process temperature range	Without display: -40...+70 °C (-40...+158 °F); With display: -25...+70 °C (-13...+158 °F)

HART® MULTIDROP LOOP

MultiCONT Multichannel Process Controller can handle up to 15 normal HART® or up to 4 Ex-proof HART® capable NIVELCO transmitters. Digital (HART®) information is processed, displayed, and if necessary, transmitted via RS485 to a computer. Remote programming of the transmitters is also possible. Processes can be visualized on computers by using NIVISION.

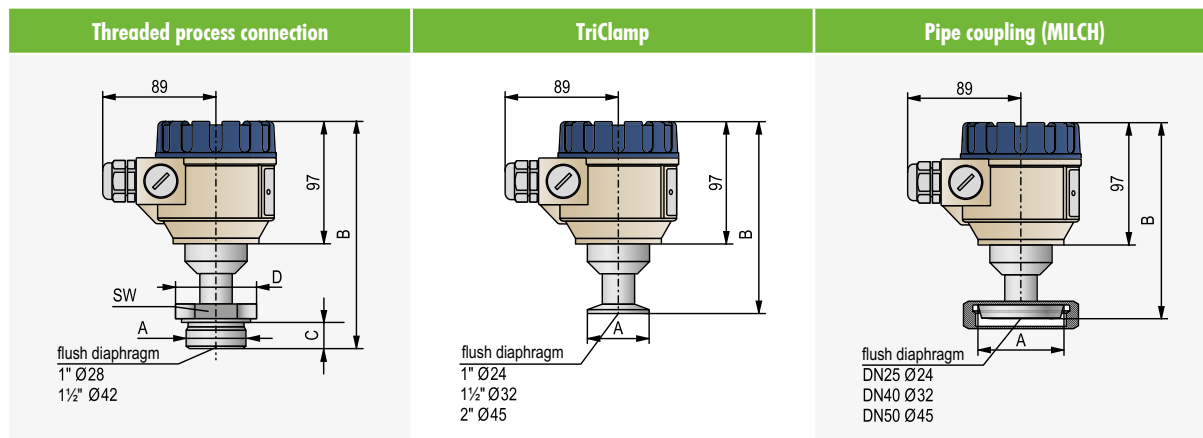


COMPUTER CONNECTION

HART® output devices and a UNICOMM SAK-305 HART®-USB modems can be connected to a PC via a wire, while using a UNICOMM SAT-504 HART®-USB/Bluetooth® modem, the transmitters can be connected via Bluetooth®. All data measured by the NIVOPRESS D can be displayed on the PC, and the devices can be reprogrammed if required. For a HART® modem, a maximum of 15 standard transmitters can be connected. In addition, the EView2 configuration or NIVISION process visualization software can also be used.



DIMENSIONS



	DTC	DTE	DTF	DTS	DTT		DTL	DTM	DTN		DTO	DTP	DTR
A	½" BSP	1" BSP	1½" BSP	1" NPT	1½" NPT	TriClamp	1"	1½"	2"	MILCH	DN25	DN40	DN50
B	190	193	185	197	189	A	50.3	50.3	64	A	44	56	68.5
C	15	19	22	26	27	B	183	183	167	B	186	170	166
D	30	50	65	52	70								
SW	27	44	55	40	55								

The dimensions are in millimetres.

ORDER CODES (NOT ALL COMBINATIONS AVAILABLE)

NIVOPRESS D ■ ■ ■ - ■ ■ ■ 1 - ■ (1)

Version	Code
Transmitter	T
Transmitter + display	B

Housing	Code
Aluminum	5
Plastic (PBT) ⁽²⁾	6
Stainless steel ⁽³⁾	7

Process connection	Code
½"	K ⁽²⁾⁽⁴⁾
1"	E
1½"	F
1"	L ⁽⁵⁾
1½"	M ⁽⁶⁾
2"	N ⁽⁶⁾
DN25	O ⁽⁷⁾
DN40	P ⁽⁷⁾
DN50	R ⁽⁸⁾

Range (gauge) / Overpressure	Code
0...0.16 bar / 0.5 bar	1 ⁽⁹⁾
0...0.25 bar / 1 bar	2 ⁽⁹⁾
0...0.4 bar / 1 bar	3 ⁽⁹⁾
0...0.6 bar / 3 bar	4 ⁽⁹⁾
0...1.0 bar / 3 bar	5 ⁽⁹⁾
0...1.6 bar / 6 bar	6 ⁽⁹⁾
0...2.5 bar / 6 bar	7
0...4.0 bar / 20 bar	8
0...6.0 bar / 20 bar	9
0...10 bar / 20 bar	A
0...16 bar / 60 bar	B
0...25 bar / 60 bar	C
0...40 bar / 100 bar	D
0...60 bar / 120 bar	E
0...100 bar / 250 bar	F
0...160 bar / 500 bar	G
0...250 bar / 500 bar	H
0...400 bar / 600 bar	J

Output / Ex	Code
4...20 mA	2
4...20 mA + HART	4
4...20 mA / Ex ia G	6
4...20 mA + HART® / Ex ia G	8

⁽¹⁾ The ordering code of an Ex should end with "Ex"

⁽²⁾ Not available in Ex version

⁽³⁾ Ex version under approval

⁽⁴⁾ Only for p > 2.5 bar

⁽⁵⁾ ISO 2852, only for 0.25...16 bar

⁽⁶⁾ ISO 2852, only for p ≤ 16 bar

⁽⁷⁾ DIN 11851, only for 0.25...40 bar

⁽⁸⁾ DIN 11851, only for 0.25...25 bar

⁽⁹⁾ Only with min. 1" connection

Accessories available to order

UNIDISP SAP-203	Plug-in display module
SAT-504-0	HART®-USB modem
SAT-504-1	HART®-USB modem + power supply for transmitter
SAT-504-2	HART®-USB/Bluetooth® modem + power supply for transmitter
SAK-305-2	HART®-USB/RS485 modem
SAK-305-6	HART®-USB/RS485 modem / Ex ia G
UNICONT PGK-301-□	Ex isolator power supply module
NIPOWER PPK-431	24 V DC power supply
UNICONT PDF-501-□	Universal loop display

Adapters (1.4571)

EAA-134	½" BSP / ½" NPT
EAA-138	½" BSP / 1" BSP
EAA-183	1" BSP / ½" BSP
EAA-185	1" BSP / ¾" BSP
EAA-189	1" BSP / 1" NPT
EAA-18C	1" BSP / ½" NPT

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