

FOR LIQUIDS

NIVOPRESS D

HYDROSTATIC LEVEL TRANSMITTERS



RA[®]
РусАвтоматизация

5 YEARS WARRANTY @ NIVELCO – WHERE ELSE?

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.

Due to their design, 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 device for food applications (*milk, pastes*). The smooth membrane surface and the maximum permissible process temperature of +125 °C 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

APPLICATIONS

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

CERTIFICATES

- ATEX (Ex ia G)



SAP-203 display

DT-500

OPERATION

Hydrostatic level measurement principle

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

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

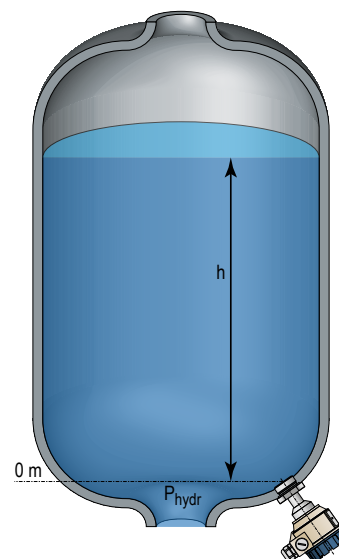
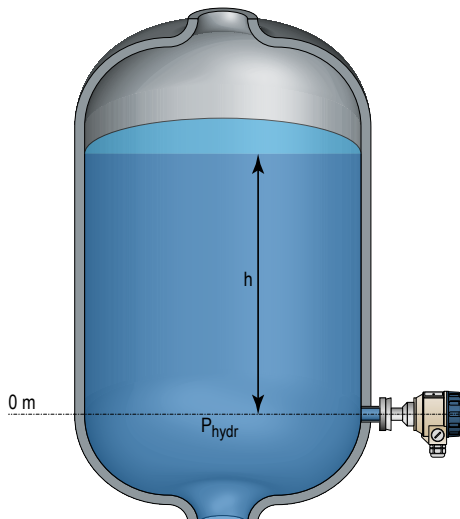
$$\downarrow$$

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

$$\downarrow$$

Maximum possible value of "h": $h_{max} = 10^5 \frac{P_{hydr,max}}{\rho \cdot g}$

- 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
- $P_{hydr,max}$ = highest pressure limit



TECHNICAL DATA

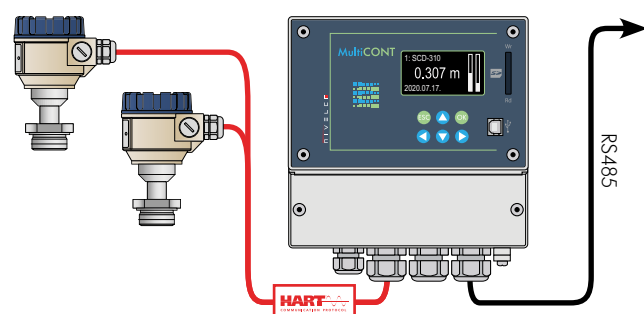
		D-500 / D-700	D-600
Measured Process Value		Level, pressure	
Sensor		Piezoresistive silicium sensor, with stainless steel flush diaphragm	
System		2-wire	
Supply Voltage		10...36 V DC	
Measuring Range		0...400 bar (as per order code)	
Overpressure		0.5...600 bar (as per order code)	
Downscale Rate		~1:2	
Zero Point Offset		50% of the measuring range	
Accuracy (Linearity Error)		P > 0.4 bar: ±0.25%; p ≤ 0.4 bar: ±0.5%	
Output	Analog	4...20 mA	
	Display	6-digit plug-in display (SAP-203)	
	Digital Communication	HART®	
Ambient Temperature		-40...+70 °C, with display: -25...+70 °C	-30...+70 °C, with display: -25... +70 °C, Ex variant: see "Ex Information"
Range of Temperature Compensation		p < 100 bar: 0...+70 °C p ≤ 0.4 bar: 0...+50 °C	
Process Temperature		-25...+125 °C	
Material of Wetted Parts	Protective Diaphragm	1.4435 (316L) stainless steel	
	Process Connection	1.4435 (316L) stainless steel	
	Seal	p < 100 bar: Viton®; p ≥ 100 bar: NBR; EPDM is ordered separately	
Pressure Transmitting Medium		Silicone oil; food industry compatible oil is ordered separately	
Housing Material		Painted aluminum or stainless steel	Plastic (PBT)
Process Connection		As per order code	
Electrical Connection		2× M20×1.5 cable glands + 2× internally threaded ½" NPT connection, cable outer diameter: Ø6...12 mm (shielded cable is recommended), wire cross section: 0.5...1.5 mm²	
Electrical Protection		Class III	
Ingress Protection		IP65	
Weight		~2 kg	~1.6 kg

Ex INFORMATION

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

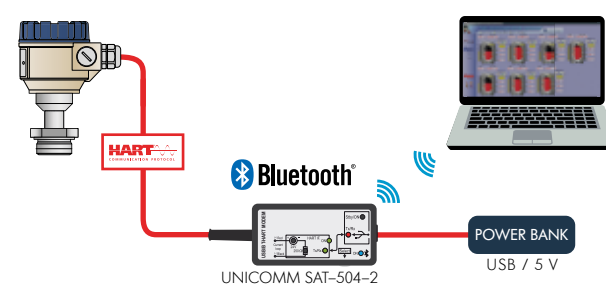
HART® MULTIDROP LOOP

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 wired, 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.



NIVOPRESS D-500

5 years

2-wire compact hydrostatic level transmitter for liquids with stainless steel flush diaphragm piezoresistive sensor

Version

D - 1 -

T	Transmitter
B	Transmitter with plug-in display

Process connection

D - 1 -

K	½" BSP (p > 2.5 bar)
E	1" BSP
F	1½" BSP
L	1" TriClamp (ISO 2852, 0,25...16 bar)
M	1½" TriClamp (ISO 2852, p ≤ 16 bar)
N	2" TriClamp (ISO 2852, p ≤ 16 bar)
O	DN25 Pipe coupling (DIN 11851, 0,25...40 bar)
P	DN40 Pipe coupling (DIN 11851, 0,25...40 bar)
R	DN50 Pipe coupling (DIN 11851, 0,25...25 bar)

Housing

D - 1 -

5	Painted aluminum
6	Fiberglass-reinforced plastic (PBT)
7	* Stainless steel

* Ex version under approval

Range (gauge) / Overpressure

D - 1 -

1	0...0.16 bar / 0.5 bar (with min. 1" process connection)
2	0...0.25 bar / 1 bar (with min. 1" process connection)
3	0...0.4 bar / 1 bar (with min. 1" process connection)
4	0...0.6 bar / 3 bar (with min. 1" process connection)
5	0...1 bar / 3 bar (with min. 1" process connection)
6	0...1.6 bar / 6 bar (with min. 1" process connection)
7	0...2.5 bar / 6 bar
8	0...4 bar / 20 bar
9	0...6 bar / 20 bar
A	0...10 bar / 20 bar
B	0...16 bar / 60 bar
C	0...25 bar / 60 bar
D	0...40 bar / 100 bar
E	0...60 bar / 120 bar
F	0...100 bar / 250 bar
G	0...160 bar / 500 bar
H	0...250 bar / 500 bar
J	0...400 bar / 600 bar

Output / Certificates

D - 1 -

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

Available on request (should be given in the text of the order)

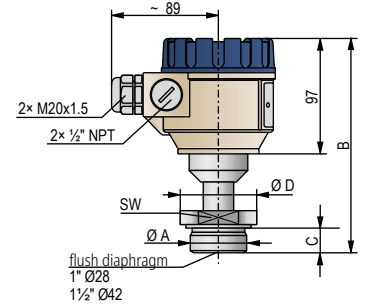
Customised 4...20 mA output calibration for ranges other than above
Filled with food compatible oil

Accessories sold separately; see relevant page for details

S A P - 2 0 3 - 0	Plug-in display module
S A T - 5 0 4 - <input type="checkbox"/>	HART®-USB/Bluetooth® modem
S A K - 3 0 5 - <input type="checkbox"/>	HART®-USB/RS485 modem

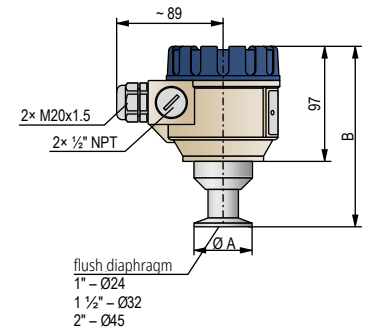
Adapters

E A A - 1 3 4 - 0	½" BSP / ½" NPT (1.4571)
E A A - 1 3 8 - 0	½" BSP / 1" BSP (1.4571)
E A A - 1 8 3 - 0	1" BSP / ½" BSP (1.4571)
E A A - 1 8 5 - 0	1" BSP / ¾" BSP (1.4571)
E A A - 1 8 9 - 0	1" BSP / 1" NPT (1.4571)
E A A - 1 8 C - 0	1" BSP / 1½" NPT (1.4571)



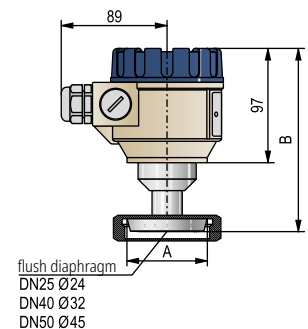
DTK / DTE / DTF-500 / 600

	DTK	DTE	DTF	DTT
A	½" BSP	1" BSP	1½" BSP	1½" NPT
B	190	193	185	189
C	15	19	22	27
D	30	50	65	70
SW	27	44	55	



DTL / DTM / DTN-500 / 600

Type	DTL	DTM	DTN
TriClamp	1"	1½"	2"
A	50.5	64	
B	183	167	



DTO / DTP / DTR-500 / 600

Type	DTO	DTP	DTR
MILCH	DN25	DN40	DN50
A	44	56	68.5
B	186	170	166

ООО "РусАвтоматизация"

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