NIVOPRESS D

HYDROSTATIC LEVEL TRANSMITTER

5 YEARS WARRANTY

NIVELCO

LEVEL TRANSMITTERS

DESCRIPTION

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 instrument for food applications *(milk, pastes)*. The smooth membrane surface and the maximum permissible medium 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 selection
- Temperature compensation
- HART® communication
- Plug-in display
- Wide variety of process connections
- IP65
- Ex version

APPLICATIONS

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

CERTIFICATE

- 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.

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

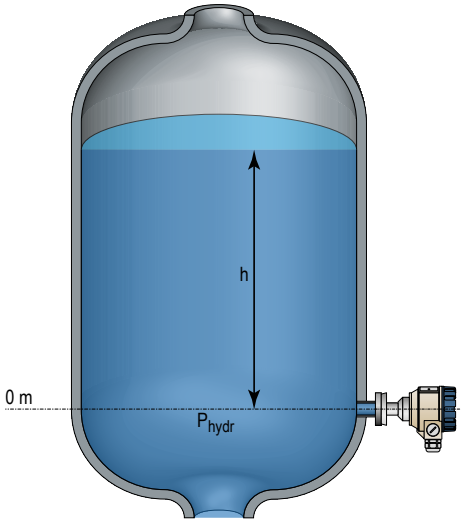
$$\downarrow$$

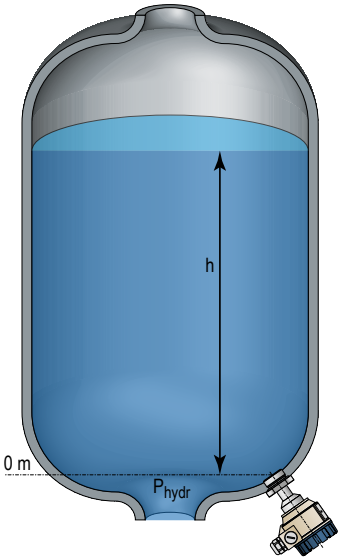
$$h = 10^{5} \frac{P_{hydr}}{\rho \cdot g}$$

$$\downarrow$$

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

P_{hydr} [bar] = hydrostatic pressure
ρ [kg/m^3] = density of the medium
g [m/s^2] = 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

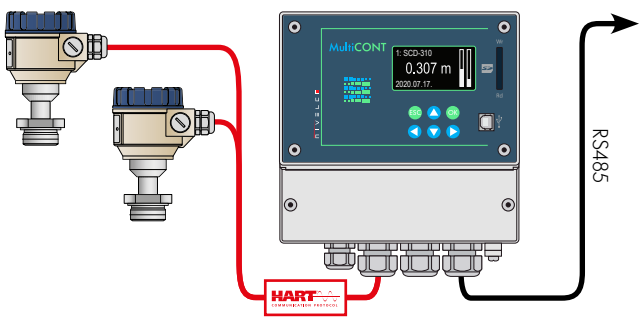
		D–500 / D–700	D–600
Measured Process Value		Level, pressure	
Sensor		Piezoresistive silicium sensor, with stainless steel flush diaphragm	
System		2-wire	
Power Supply		10…36 V DC	
Measuring Range		0…400 bar (0…5800 psi) (as per order code)	
Overpressure		0.5…600 bar (72.5…8700 psi) (as per order code)	
Downscale Rate		~1:2	
Zero Point Offset		50% of the measuring range	
Accuracy (Linearity Error)		p > 0.4 bar (5.8 psi): ±0.25%; p ≤ 0.4 bar: ±0.5%	
Output	Analog	4…20 mA	
	Display	SAP–203 – 6-digit plug-in LCD display	
	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 bar (1450 psi): 0…+70 °C (+32…+158 °F) p ≤ 0.4 bar: 0…+50 °C (+32…+122 °F)	
Medium Temperature		–25…+125 °C (–13…+257 °F)	
Material of Wetted Parts	Protection Diaphragm	1.4435 (316L) stainless steel	
	Process Connection		
	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		Powder-coated aluminum or stainless steel	Plastic (PBT)
Process Connection		As per order code	
Electrical Connection		2× M20×1.5 plastic cable glands, for 6…12 mm (0.25…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 ≤ 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 (–40…+158 °F); With display: –25…+70 °C (–13…+158 °F)

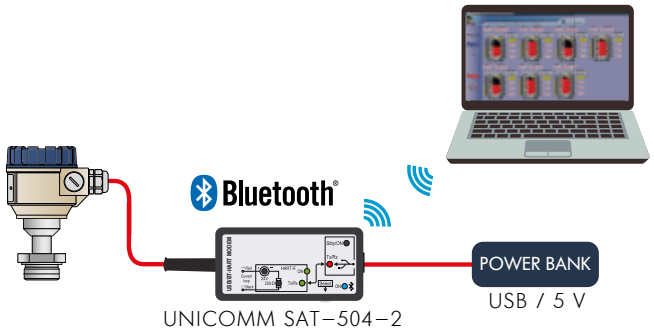
HART® MULTIDROP LOOP

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**.



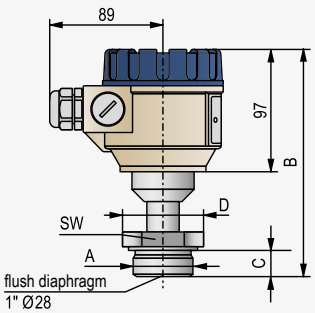
COMPUTER CONNECTION

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.

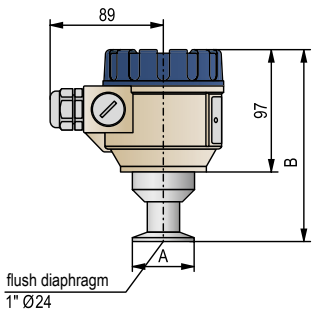


DIMENSIONS

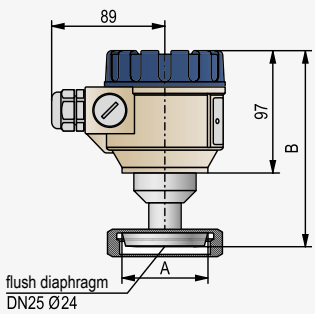
Threaded process connection



TriClamp



Pipe coupling (MILCH)



	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								

ORDER CODES (NOT ALL COMBINATIONS AVAILABLE)

NIVOPRESS D■■–■■1–■[(1)]

Version	Code
Transmitter	T
Transmitter + display	B

Housing	Code
Aluminum	5
Plastic[(2)]	6
Stainless steel[(10)]	7

Process connection		Code
½"	BSP	C[(2)(3)]
1"	BSP	E[(4)]
1½"	BSP	F
1"	NPT	S
1½"	NPT	T
1"	TriClamp	L[(6)]
1½"	TriClamp	M[(7)]
2"	TriClamp	N[(7)]
DN25	Pipe Coupling (DIN 11851)	O[(8)]
DN40	Pipe Coupling (DIN 11851)	P[(8)]
DN50	Pipe Coupling (DIN 11851)	R[(9)]

Range (gauge) / Overpressure	Code
0…0.16 bar / 0.5 bar	1[(5)]
0…0.25 bar / 1 bar	2[(5)]
0…0.4 bar / 1 bar	3[(5)]
0…0.6 bar / 3 bar	4[(5)]
0…1.0 bar / 3 bar	5[(5)]
0…1.6 bar / 6 bar	6[(5)]
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 order code of an Ex version should end in "Ex"
(2) Not available in Ex version
(3) Only for p ≥ 2.5 bar
(4) Only for p ≥ 1 bar
(5) Only with min. 1" connection
(6) Only for 0.25…16 bar
(7) Only for p ≤ 16 bar
(8) Only for 0.25…40 bar
(9) Only for 0.25…25 bar
(10) Ex version under approval

Accessories		
SAP–203		Plug-in LCD display unit
UNICOMM	SAT–304	HART®–USB modem
UNICOMM	SAT–504	HART®–USB/Bluetooth® modem
UNICOMM	SAK–305–2	HART®–USB/RS485 modem
UNICOMM	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	
EAA–604–0	½" BSP / ½" NPT (1.4571)
NAZ–104–0	1" BSP / ½" BSP (1.4571)
NAZ–107–0	½" BSP / 1" BSP (1.4571)

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