

NIVOPRESS N submersible hydrostatic level transmitters are designed to measure the level of clean and contaminated liquids. The pressure sensor at the end of the probe measures the sum of the hydrostatic pressure (P_{hydro}) of the liquid column above and the atmospheric pressure (P_{atm}). Atmospheric pressure is channeled to the sensor through a breathing capillary equipped with a moisture filter that prevents moisture from damaging the electronics. The atmospheric pressure is subtracted from the overall measured pressure to get the hydrostatic pressure, which is proportional to the height of the liquid column (h), then the sensor's signal is converted into an output signal. If both the level and the temperature of the liquid needs to be measured, a combined (level & temperature) transmitters are available. There is a wide variety of accessories for the transmitters.

A sewage adapter operating on the diving bell principle can be snapped into the protective cap's place to avoid the direct contact between the sensor and the measured contaminated liquid. A mechanical filter is built into NZ type transmitters as a measure of extra protection. N-500 devices can be used in hazardous environments. NZ screw-in type transmitters are recommended for applications where there is a risk of flooding. NB/NG plastic housing types are designed for those applications where aggressive mediums (e. g. saline solutions or seawater) may corrode stainless steel.

FEATURES

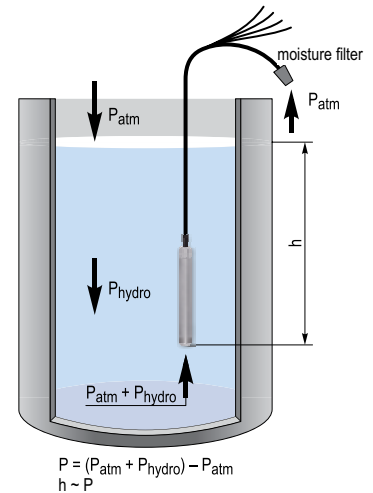
- Measuring range up to 200 m
- Remotely programmable
- IP68
- Submersible or screw-in versions
- Ø22 / Ø24 mm tube
- HART® communication
- 2 or 3-wire versions
- Ex versions
- 2x 4...20 mA output (level + temperature)
- Built-in Pt100 temperature sensor
- Overvoltage and inverse polarity protection
- Wide range of accessories
- Approved for potable water
- Available with capacitance ceramic, piezoresistive stainless steel or ceramic sensor

APPLICATIONS

- Level and temperature measurement of potable water wells, tanks, pools
- Submersible pump control
- Screw-in submersible version with IP68 protection for applications with risk of flooding
- Clean or slightly polluted, contaminated liquids
- Sewage
- Draw-down protection
- Sewage lift station control
- Saline solutions, seawater

CERTIFICATES

- ATEX (Ex ia G)
- UKCA Ex (Ex ia G)



TECHNICAL DATA

		2-wire				3-wire
		NB, NG	NK, NN / ND, NH	NC, NT	NP, NF / NZ, NR	NPH, NFH / NZH, NRH
Sensor	Principle	Piezoresistive		Capacitive	Piezoresistive	
	Material	Ceramic			Stainless steel	
Housing		Plastic	Stainless steel			
Measuring range		0...20 m water head			0...200 m water head	
		As per order code; current output can be customized within 2...130% pressure range; remotely programmable				
Overload allowed (versus range)		3× (≤ 20 mH ₂ O) 2× (> 20 mH ₂ O)		20× (≤ 3 mH ₂ O) 10× (> 3 mH ₂ O)	3×	
Output		4...20 mA + HART®		4...20 mA	4...20 mA + HART®	0...10 V (0 V ≤ 80 mV) measured to the power supply
Power supply		12...30 V DC				18...30 V DC / 6 mA
Temperature measurement		NPD, NZD types: 2-wire 4...20 mA output (power supply: 12...30 V DC); 0...+60 °C, acc.: ±3 °C N□P types: 4-wire Pt100 "B" temperature sensor; Other types with HART® output: temperature can be queried as HART® Secondary Value, acc.: ±3 °C				–
Linearity error (level)		±0.45%		±0.25%		
Temperature error		≤ ±0.1% / 10 K				≤ ±0.2% / 10 K
Process temperature ⁽¹⁾		–30...+60 °C				
Process connection		NAA-209 cable mounting wedge clamp, NZ, NR, ND, NH types: ¾" BSP thread				
Ingress protection		IP68				
Electrical protection		Class III				
Electrical connection		Shielded cable with breathing capillary				
Cable		Ø7 mm; 0.34 mm ²				
Cable length		0...300 m as order code				
Dimensions		Ø24 × 212 mm	NK, NN: Ø22 × 173 mm ND, NH: Ø38 × 174 mm	Ø40 × 146 mm	NP, NF: Ø22 × 173 mm NZ, NR: Ø38 × 174 mm	
Weight		Probe: 200 g	NK, NN: Probe: 200 g ND, NH: Probe: 300 g	Probe: 0.4 kg	NP, NF: Probe: 200 g NZ, NR: Probe: 300 g	
Material of wetted parts	Sensor	Al ₂ O ₃			1.4404 (316L) or (1.4571 [316Ti] and 1.4435 [316L])	
	Housing	POM	1.4571 (316Ti)			
	Cable coating	Polyurethane (PUR) or FEP				
	Seals	Viton® (FKM)				
	Protective cap	POM	1.4571 (316Ti)		–	1.4571 (316Ti)

* m H₂O means: 1 metre of water column, 1 mH₂O ~0.1 bar

Ex INFORMATION

NP / NF / NZ / NR / NK / NN / ND / NH□-5□□-□Ex	
Protection	Intrinsic safety
Ex marking	Up to 100 m cable length: Ⓔ II 1G Ex ia IIC T6 Ga, between 100 m and 300 m cable length: Ⓔ II 1G Ex ia IIB T6 Ga
Intrinsic safety data	U _i = 30 V, I _i = 100 mA, P _i = 0.8 W for IIC gas group: C _i ≤ 52 nF, L _i ≤ 1.4 mH (calculated with 100 m integrated cable), for IIB gas group: C _i ≤ 132 nF, L _i ≤ 1.6 mH
Power supply	14...30 V DC
Operation temperature range	–30...+60 °C

TECHNICAL PROPERTIES OF ACCESSORIES

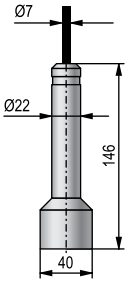
NAA-101 – Cable terminal box	
Dimensions	93 × 93 × 55 mm
Ingress protection	IP65
Process temperature range	–40...+70 °C
Material	Polystyrene
Cable gland	M20×1.5 (cable outer diameter: Ø5...Ø10 mm)
Electrical connection	Terminal block (for max. 2.5 mm ² wire cross section)
NAA-102 – Cable terminal box with overvoltage protection	
Data	See NAA-101
Electrical Properties	See OVP

⁽¹⁾ High-temperature (up to +75 °C) version is ordered separately

⁽²⁾ Applicable only for one 2-wire 4...20 mA (HART®) device!

NAA-209 – Cable mounting wedge clamp		
Max. mechanical load	300 m cable	
Material	Polyamide, Stainless Steel wedge clamp	
Process temperature range	–20... + 60 °C	
	Overvoltage protection	
	OVP-22 / 33 ⁽²⁾	OVP-32 / 33 ⁽²⁾
Version	Field use	Rail-mountable (EN 60715)
Dimensions	72 × 42 × 19 mm	62 × 65 × 18 mm
Ingress protection	IP54	IP20
Breakdown voltage	33 V	
Absorbed energy	600 W / 1 ms	
Serial resistance	13 Ω	
Leakage current	≤ 10 µA	

NIVOPRESS N-200			5 years
2-wire submersible hydrostatic level transmitter for liquids with capacitive ceramic sensor; humidity filter: fixed to breathing cable			
Type / Cable			
N <input type="checkbox"/> <input type="checkbox"/> - 2 <input type="checkbox"/> <input type="checkbox"/> - <input type="checkbox"/>			
C		Capacitive ceramic sensor / PUR	
T		Capacitive ceramic sensor / FEP	
Output			
N <input type="checkbox"/> <input type="checkbox"/> - 2 <input type="checkbox"/> <input type="checkbox"/> - <input type="checkbox"/>			
K		Two-wire, 4...0 mA output	
P		Level: 4...20 mA + Temperature: Pt100 sensor	
Version			
N <input type="checkbox"/> <input type="checkbox"/> - <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> - <input type="checkbox"/>			
2		Standard	
Range			
N <input type="checkbox"/> <input type="checkbox"/> - 2 <input type="checkbox"/> <input type="checkbox"/> - <input type="checkbox"/>			
1		0...1 mH2O (0...100 mbar)	
2		0...2 mH2O (0...200 mbar)	
3		0...5 mH2O (0...500 mbar)	
4		0...10 mH2O (0...1000 mbar)	
5		0...20 mH2O (0...2000 mbar)	
Breathing cable length			
N <input type="checkbox"/> <input type="checkbox"/> - 2 <input type="checkbox"/> <input type="checkbox"/> - <input type="checkbox"/>			
PUR cable			
n		n	1...99 m; sold by the meter
o		o	100...190 m; sold by the meter
p		p	200...290 m; sold by the meter
C		0	300 m; sold by the meter
FEP cable			
n		n	1...99 m; each started 1 m
o		o	100...190 m; each started 1 m
p		p	200...290 m; each started 1 m
C		0	300 m; each started 1 m
nn = 01...99 : 1...99 m			
oo = A0...A9 : 100...190 m			
pp = B0...B9 : 200...290 m			
Available on request (must be specified in the text of the order)			
High temperature (up to +75 °C) version			
Custom 4...20 mA output calibration			



NC□ / NT□-200

NIVOPRESS N-400/N-500

5 years

2 or 3-wire submersible hydrostatic level transmitter for liquids with stainless steel piezoresistive sensor; humidity filter: fixed to breathing cable

Type

N ■ ■ - ■ ■ ■ - ■ ■

P	Piezoresistive stainless steel sensor / PUR
F	Piezoresistive stainless steel sensor / FEP
Z	Piezoresistive stainless steel sensor, 3/4" BSP process connection / PUR
R	Piezoresistive stainless steel sensor, 3/4" BSP process connection / FEP

Output

N ■ ■ - ■ ■ ■ - ■ ■

K	Two-wire, 4...20 mA + HART
H	* Three-wire, 0...10 V DC output
D	* Level: 4...20 mA + HART + Temperature: 4...20 mA (electronic temp. sensor)
P	Level: 4...20 mA + HART + Temperature: Pt100 sensor

* Ex version not available

Version

N ■ ■ - ■ ■ ■ - ■ ■

4	Standard
5	Ex ia G

Range

N ■ ■ - ■ ■ ■ - ■ ■

1	0...1 mH ₂ O (0...100 mbar)
2	0...2 mH ₂ O (0...200 mbar)
3	0...5 mH ₂ O (0...500 mbar)
4	0...10 mH ₂ O (0...1 000 mbar)
5	0...20 mH ₂ O (0...2 000 mbar)
6	0...50 mH ₂ O (0...5000 mbar)
7	0...100 mH ₂ O (0...10000 mbar)
8	0...200 mH ₂ O (0...20000 mbar)

Breathing cable length

N ■ ■ - ■ ■ ■ - ■ ■

PUR cable

n	n	1...99 m; sold by the meter
o	o	100...190 m; sold by the meter
p	p	200...290 m; sold by the meter
C	0	300 m; sold by the meter

FEP cable

n	n	1...99 m; sold by the meter
o	o	100...190 m; sold by the meter
p	p	200...290 m; sold by the meter
C	0	300 m; sold by the meter

nn = 01...99 : 1...99 m

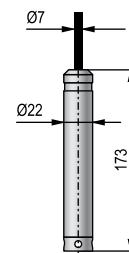
oo = A0...A9 : 100...190 m

pp = B0...B9 : 200...290 m

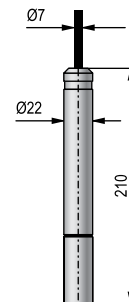
Available on request (must be specified in the text of the order)

High temperature (up to +75 °C) version (Ex version not available)

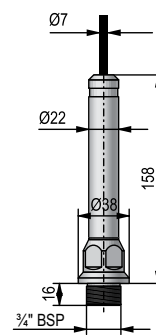
Custom 4...20 mA output calibration



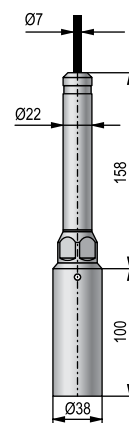
NP□ / NF□-400 / 500



NP□ / NF□-400 / 500
+ NAW-104



NZ□ / NR□-400 / 500



NZ□ / NR□-400 / 500
+ NAZ-103

NIVOPRESS N-400

5 years

2-wire submersible hydrostatic level transmitter for liquids
with piezoresistive ceramic sensor; humidity filter: fixed to breathing cable

Type

N ☐ ☐ - ☐ ☐ - ☐ ☐ - ☐ ☐

K	Piezoresistive ceramic sensor / PUR / 1.4571
N	Piezoresistive ceramic sensor / FEP / 1.4571
B	Piezoresistive ceramic sensor / PUR / POM
G	Piezoresistive ceramic sensor / FEP / POM
D	Piezoresistive ceramic sensor, 3/4" BSP process connection / PUR / 1.4571
H	Piezoresistive ceramic sensor, 3/4" BSP process connection / FEP / 1.4571

* Ex version not available

Output

N ☐ ☐ - ☐ ☐ - ☐ ☐ - ☐ ☐

K	Two-wire, 4...20 mA + HART
P	Level: 4...20 mA + HART + Temperature: Pt100 sensor

Version

N ☐ ☐ - ☐ ☐ - ☐ ☐ - ☐ ☐

4	Standard
5	Ex ia G

Range

N ☐ ☐ - ☐ ☐ - ☐ ☐ - ☐ ☐

2	0...2 mH ₂ O (0...200 mbar)
3	0...5 mH ₂ O (0...500 mbar)
4	0...10 mH ₂ O (0...1 000 mbar)
5	0...20 mH ₂ O (0...2 000 mbar)

Breathing cable length

N ☐ ☐ - ☐ ☐ - ☐ ☐ - ☐ ☐

PUR cable

n	n	1...99 m; each started 1 m
o	o	100...190 m; sold by the meter
p	p	200...290 m; sold by the meter
C	0	300 m; sold by the meter

FEP cable

n	n	1...99 m; sold by the meter
o	o	100...190 m; sold by the meter
p	p	200...290 m; sold by the meter
C	0	300 m; sold by the meter

nn = 01 ...99 : 1...99 m

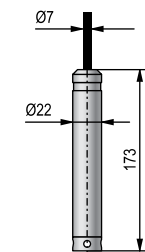
oo = A0...A9 : 100...190 m

pp = B0...B9 : 200...290 m

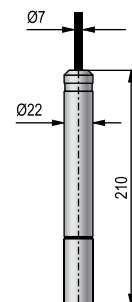
Available on request (must be specified in the text of the order)

High temperature (up to +75 °C) version

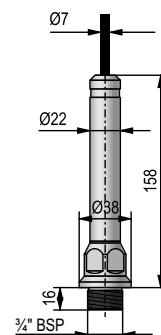
Custom 4...20 mA output calibration



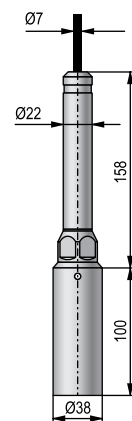
NIK / NNI-400



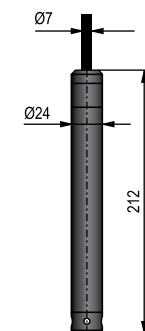
NIK / NNI-400
+ NAW-104



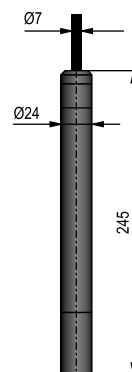
NDI / NHI-400



NDI / NHI-400
+ NAW-103



NBI / NGI-400



NBI / NGI-400
+ NAW-107

NIV24

NPK-431-0

NPK-441-0

NIVOPRESS N accessories (sold separately)

5 years

Type

■ A A - 1 0 ■ - 0

N Terminal box

Terminal boxes and cable mounting units

N A A - 1 0 ■ - 0

- | | |
|---|---|
| 1 | Terminal box with filter without OVP |
| 2 | Terminal box with filter with OVP-12/33 (only for N_K versions) |
| 5 | Sliding sleeve 1½" BSP |
| 6 | Sliding sleeve 1½" NPT |

N A A - 2 0 9 - 0 Cable mounting wedge clamp

Overvoltage protection units

O V P - ■ 2 S - L

- | | |
|---|------------------------------------|
| 2 | OVP-22/33, outdoor, IP54 |
| 3 | OVP-32/33, IP20, DIN rail mounting |

Sewage adapters

N A W - 1 0 ■ - 0

- | | |
|---|---|
| 4 | Can be mounted in the place of the protective cap / 1.4571 |
| 7 | Can be mounted in the place of the protective cap / POM (applicable when there is no risk of tilting) |

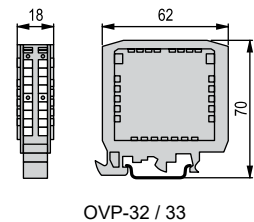
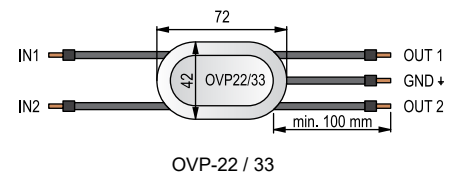
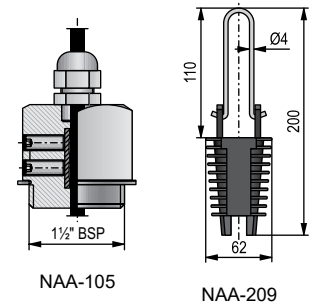
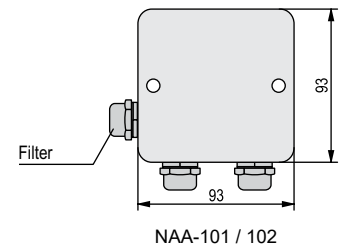
N A Z - 1 0 3 - 0 Sewage adapter (for ¾" threaded process connection) / 1.4571

Adapters

- | | |
|-------------------|---------------------------|
| N A Z - 1 0 1 - 0 | ¾" BSP / ½" BSP (1.4571) |
| N A Z - 1 0 2 - 0 | ¾" BSP / M20x1.5 (1.4571) |
| N A Z - 1 0 5 - 0 | ¾" BSP / 1" NPT (1.4571) |
| N A Z - 1 0 6 - 0 | ¾" BSP / 1" BSP (1.4571) |
| N A Z - 1 0 7 - 0 | ½" BSP / 1" BSP (1.4571) |

Accessories (sold separately; see relevant page for details)

- | | |
|-------------------|-----------------------------------|
| S A T - 3 0 4 - 0 | HART®-USB modem |
| S A T - 5 0 4 - ■ | HART®-USB/Bluetooth® modem |
| S A K - 3 0 5 - 2 | HART®-USB/RS485 modem |
| S A K - 3 0 5 - 6 | HART®-USB/RS485 modem / [Ex ia G] |



NIV24

- NAA-209-0
- OVP-22 / 33
- OVP-32 / 33
- NAA-101-0