

GENERAL DESCRIPTION

The **NIVOPRESS N** hydrostatic level transmitters are designed to measure the level of clean or contaminated liquids. The pressure sensor at the bottom of the probe measures the sum of the hydrostatic pressure (P_{hydro}) of the liquid column above it and the atmospheric pressure (P_{atm}). The atmospheric pressure is led to the sensor through a breathing capillary which is equipped with a moisture filter that prevents the moisture reaching and damaging the electronics. This enables the atmospheric pressure to be subtracted from the measured pressure to get the hydrostatic pressure which is proportional to the height of the liquid column (h). The electronics converts the sensor's signal into an output signal. If temperature measurement (of the liquid) is needed beside the level measurement a combined (level + temperature) transmitter should be used. The installation and wiring of the transmitter is helped by the wide variety of accessories. A sewage adapter working on the principle of the diving bell can be snapped into the place of the protecting cap to avoid the direct contact between the sensor and the measured contaminated liquid. An extra mechanical protection is built in the **NZ** type transmitters in the form of a mechanical filter. The **N-500** types can be used in hazardous environments. The **NZ** screw-in type transmitters are recommended for applications where there is a risk of flooding. The **NB/NG** plastic housing types are designed for those applications where the aggressive medium (e.g. saline solutions or seawater) could cause galvanic corrosion of the stainless steel body.

MAIN FEATURES

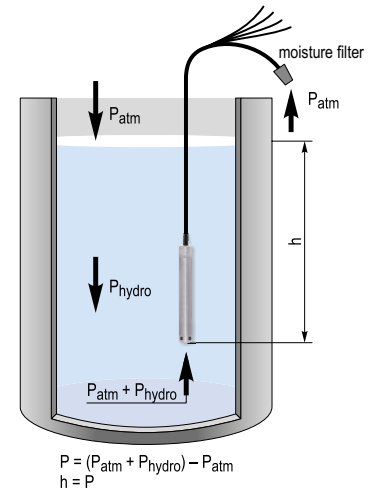
- Measuring range up to 656 ft
- Remote programmable
- IP68 protection
- Submersible or screw-in types
- Ø 0.85 / 1 inch tube
- HART communication
- 2- or 3-wire versions
- Ex versions
- 2 x 4–20mA output (level + temperature)
- Built-in Pt100 temperature sensor
- Overvoltage and inverse polarity protection
- Wide range of accessories
- Approved for potable water
- Available with capacitance ceramic, piezoresistive stainless steel or ceramic sensor

APPLICATIONS

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

CERTIFICATIONS

- ATEX approved (Ex ia)



TECHNICAL DATA

Type		2-wire			3-wire
		NB, NG	NK, NN / ND, NH	NC, NT	NP, NF / NZ, NR
Sensor type	Principle	Piezoresistive		Capacitance	Piezoresistive
	Material	Ceramic			Stainless steel
Housing		Plastic			Stainless steel
Measuring range		0 to 65 ft (0 to 20 m) water head		0 to 656 ft (0 to 200 m) water head	
As per order code; the current output can be customized in the pressure range from 2% to 130% with remote programming					
Overload allowed (versus range)		3 x	20x (h ≤ 3 mvo) 10x (h > 3 mvo)		3 x
Output		4 – 20 mA + HART		4 – 20 mA	4 – 20 mA + HART
Power supply		12 – 30 V DC			0 – 10V (0 V ≤ 80 mV) measured to the power supply 18 – 30 V DC / 6 mA
Temperature measurement		NPD and NZD types: power supply: 12 – 30 V DC / 4 – 20 mA; 32 °F to 140 °F, Accuracy: ±5,4 °F			–
		N□P types: Pt100 B temperature sensor, other types with HART output: temperature can be queried as HART Secondary Value, Accuracy: ±5,4 °F			
Linearity error (level)		± 0.45 %			± 0.25 %
Temperature error		≤ ± 0.1 % / 10 K			≤ ± 0.2 % / 10 K
Process temperature ⁽¹⁾		-22 °F to 140 °F			
Process connection		NAA-209 cable mounting wedge clamp, NZ, NR, ND, NH types: 3/4" BSP thread			
Ingress protection		IP68			
Electrical protection		Class III.			
Electrical connection		Shielded cable with breathing capillary			
Cable		Ø 0.275 inch; AWG22			
Cable length		0 ... 985 ft (0 ... 300 m) as per order code			
Dimensions		Ø 1x8.3 inch	NK,NN: Ø 0.87x6.8 inch ND,NH: Ø 1.5x6.85 inch	Ø 1.55x5.75 inch	NP,NF: Ø 0.87x6.8 inch NZ,NR: Ø 1.5x6.85 inch
Mass		Probe: 0.33 lb	NK,NN: Probe: 0.44 lb ND,NH: Probe: 0.66 lb	Probe: 0.88 lb	NP,NF: Probe: 0.44 lb NZ,NR: Probe: 0.66 lb
Material of wetted parts		Sensor	Al ₂ O ₃		316L (1.4404)
		Housing	POM		316 Ti (1.4571)
		Cable coating	Polyurethane (PUR) or FEP		
		Sealings	VITON (FKM)		
		Protecting cap	POM	316 Ti (1.4571)	–
					316 Ti (1.4571)

SPECIAL DATA FOR Ex CERTIFIED MODELS

Type	NP / NF / NZ / NR / NK / NN / ND / NH□-5□□-□ Ex
Protection type	Intrinsically safe
Ex marking	
Intrinsically safe data	See: www.nivelco.com
Power supply	14 – 30 V DC
Operation temperature range	-22 °F to 140 °F

TECHNICAL DATA OF ACCESSORIES

Cable terminal box	NAA-101
Dimensions	3.66 x 3.66 x 2.16 inch
Ingress protection	IP65
Process temperature range	-40 °F to +158 °F
Material	Polystyrene
Cable gland	M20x1.5 (cable outer diameter: 0.2 ... 0.4 inch)
Electrical connection	Terminal block (for max. AWG13 wire cross section)
Cable terminal box with overvoltage protection	NAA-102
Data	See: NAA-101
Electrical data	See: OVP

Cable mounting wedge clamp	NAA-209	
Max. mechanical load	985 ft (300 m) cable	
Material	Polyamide, stainless steel wedge clamp	
Process temperature range	-4 °F to +140 °F	
Overvoltage protection unit	OVP22/33 ⁽²⁾	OVP32/33 ⁽²⁾
Type	field use	EN 60715 rail mountable
Dimensions	2.8x 1.65x 0.75 inch	2.44x 2.56x 0.7 inch
Ingress protection	IP54	IP20
Breakdown voltage	33 V	
Absorbed energy	600 W / 1 ms	
Serial resistance	13 Ω	
Leakage current	≤ 10 μA	

⁽¹⁾ High temperature (up to 167 °F (75°C)) version is available on special request

⁽²⁾ Only for 2-wire 4–20 mA equipments

NIVOPRESS N-200

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

Type / Cable

N	□	□	-	2	□	□	-	□
C	Capacitive ceramic sensor / PUR							
T	Capacitive ceramic sensor / FEP							

Output

N	□	□	-	2	□	□	-	□
K	Two-wire, 4-20 mA output							
P	Level: 4-20mA + Temperature: Pt100 sensor							

Version

N	□	□	-	□	□	□	-	□
2	Standard							

Range

N	□	□	-	2	□	□	-	□
1	0-1 m w.h. (0-100 mbar)							
2	0-2 m w.h. (0-200 mbar)							
3	0-5 m w.h. (0-500 mbar)							
4	0-10 m w.h. (0-1.000 mbar)							
5	0-20 m w.h. (0-2.000 mbar)							

Breathing cable length

N	□	□	-	2	□	□	-	□
PUR 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						
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						

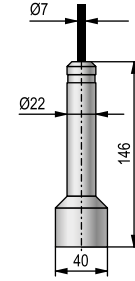
nn = 01-99 : 1-99 m

oo = A0-A9 : 100-190 m

pp = B0-B9 : 200-290 m

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

High temperature (up to 75°C) version
Customised 4-20 mA output calibration



NC□ / NT□-200

NIVOPRESS N-400/N-500

2- or 3-wire borehole 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 VDC output					
D	*	Level: 4-20 mA + HART + Temperature: 4-20mA (electronic temp. sensor)					
P	Level: 4-20 mA + HART + Temperature: Pt100 sensor						

* Ex version not available

Version

N	□	□	-	□	□	-	□
4	Standard						
5	Ex						

Range

N	□	□	-	□	□	-	□
1	0-1 m w.h. (0-100 mbar)						
2	0-2 m w.h. (0-200 mbar)						
3	0-5 m w.h. (0-500 mbar)						
4	0-10 m w.h. (0-1.000 mbar)						
5	0-20 m w.h. (0-2.000 mbar)						
6	0-50 m w.h. (0-5.000 mbar)						
7	0-100 m w.h. (0-10.000 mbar)						
8	0-200 m w.h. (0-20.000 mbar)						

Breathing cable length

N	□	□	-	□	□	-	□
PUR 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					
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

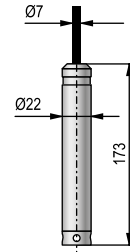
oo = A0-A9 : 100-190 m

pp = B0-B9 : 200-290 m

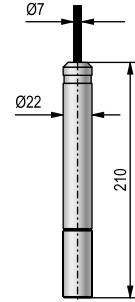
Available on request (should be given in the text of the order)

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

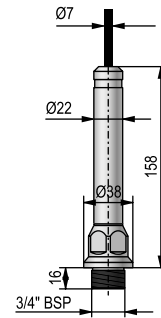
Customised 4-20 mA output calibration



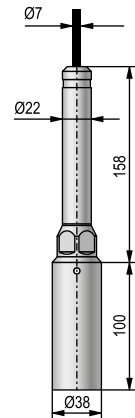
NPK / NFO-400/500



NPK / NFO-400/500 + NAW-104



NZK / NRO-400/500



NZK / NRO-400/500 + NAZ-103

NIV24

NPK-431-0

NPK-441-0

NIVOPRESS N-400

2-wire borehole 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

Range

N	■ ■ - ■ ■ ■ - ■ ■
1	0-1 m w.h. (0-100 mbar)
2	0-2 m w.h. (0-200 mbar)
3	0-5 m w.h. (0-500 mbar)
4	0-10 m w.h. (0-1.000 mbar)
5	0-20 m w.h. (0-2.000 mbar)

Breathing cable length

N ■ ■ - ■ ■ ■ - ■ ■

PUR 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

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

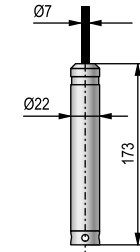
oo = A0-A9 : 100-190 m

pp = B0-B9 : 200-290 m

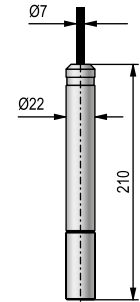
Available on request (should be given in the text of the order)

High temperature (up to 75°C) version

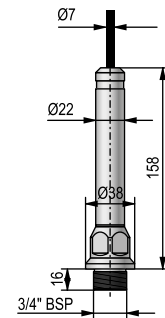
Customised 4-20 mA output calibration



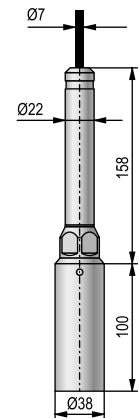
NIKO / NNQ-400



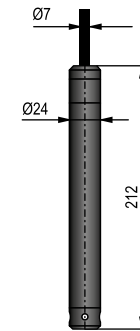
NIKO / NNQ-400
+ NAW-104



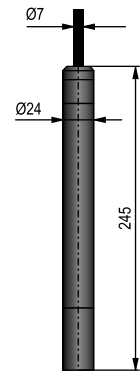
NDK / NHQ-400



NDK / NHQ-400
+ NAZ-103



NBO / NGO-400



NBO / NGO-400
+ NAW-107

NIVOPRESS N accessories to order

■ A A - 1 0 ■ - 0

N

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 1 1/2" BSP
- 6 Sliding sleeve 1 1/2" NPT

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

Overvoltage protection units

O V P - ■ 2 S - L

- 2 IP54
- 3 IP20, DIN rail mounting

Sewage adapters

N A W - 1 0 ■ - 0

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

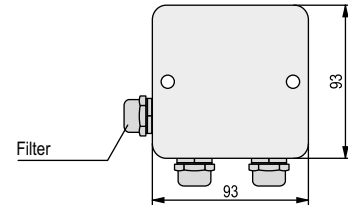
N A Z - 1 0 3 - 0 Sewage adapter (for 3/4" threaded process connection) / 1.4571

Adapters

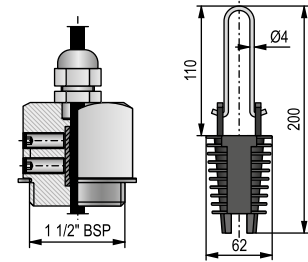
- N A Z - 1 0 1 - 0 3/4" BSP / 1/2" BSP (1.4571)
- N A Z - 1 0 2 - 0 3/4" BSP / M20x1,5 (1.4571)
- N A Z - 1 0 4 - 0 1" BSP / 1/2" BSP (1.4571)
- N A Z - 1 0 5 - 0 3/4" BSP / 1" NPT (1.4571)
- N A Z - 1 0 6 - 0 3/4" BSP / 1" BSP (1.4571)

Accessories to order (see relevant page for details)

- S A T - 3 0 4 - 0 HART-USB 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

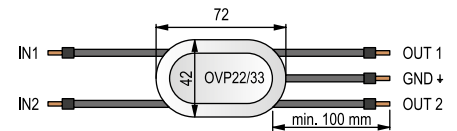


NAA-101 / NAA-102

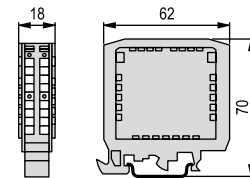


NAA-105

NAA-209



OVP-22 / 33



OVP-32 / 33

NIV24

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