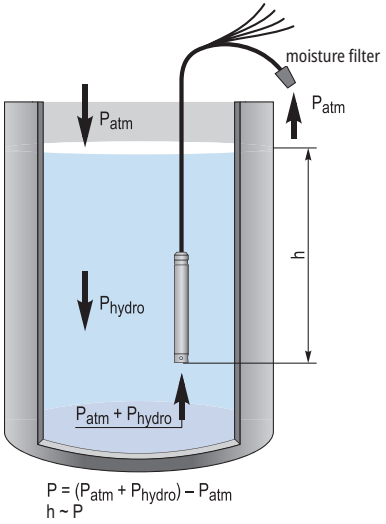
NIVOPRESS N

SUBMERSIBLE HYDROSTATIC LEVEL TRANSMITTER

User Manual
9th Edition

Manufacturer:
NIVELCO Process Control Co.
H-1043 Budapest, Dugonics u. 11.
Tel.: +36 1 889 0100
E-mail: sales@nivelco.com ■ www.nivelco.com



P_{atm}: Atmospheric pressure
P_{hydro}: Hydrostatic pressure of the liquid column above the probe
h: Height of the liquid column above the probe

Certificates		Reference document number
	ATEX, Certificate No.: BKI25ATEX0012 X, Issue: 00	**npk411hu22h08-b**
	Bureau Veritas, Certificate No.: -	**-**
	Potable Water Safety Certificate	**NNGYK/17024-5/2024**

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Thank you for choosing a NIVELCO device.

1. APPLICATION

NIVOPRESS N submersible hydrostatic level transmitters are applicable for the continuous level measurement of clean liquids or liquids with slight chemical contamination in wells, open reservoirs or tanks. The **NC** is recommended for level detection of contaminated water. **NIVOPRESS N** is easy to install in tanks and deep wells, and especially recommended for controlling submersible pumps. The use of supplemental accessories is recommended. A sewage adapter prevents direct contact between the sewage and the diaphragm of the built-in pressure sensor. 2-wire types are available with built-in 4-wire Pt100 temperature sensor or separate 2-wire temperature transmitter. 2-wire types have HART® communication interface. The Ex-types are available for explosion-hazardous environments.

The **NBB–400** detachable head unit versions are particularly ideal for marine applications such as ships and floating docks. The separated head design allows for quick sensor replacement without the need for complex wiring disassembly, minimizing downtime and maintenance effort.

2. TECHNICAL DATA

		2-wire					3-wire
	Type	NBB + NAB / NAG	NBK, NBP, NGK, NGP	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 [1]		0...200 mH_2O (0...656 ftH_2O)			0...20 mH_2O (0...65.6 ftH_2O)	0...350 mH_2O (0...1148 ftH_2O)	0...100 mH_2O (0...328 ftH_2O)
		As per order code; current output can be customized within 2...130% pressure range; remotely programmable					
Overload allowed (versus range)		3× (≤20 mH_2O), 2× (>20 mH_2O)			20× (≤3 mH_2O), 10× (>3 mH_2O)	3×	
Output		4...20 mA + HART®			4...20 mA	4...20 mA + HART®	0...10 V (0 V ≤ 100 mV) measured to the negative supply voltage
Supply voltage		12...30 V DC, nominal voltage: 24 V DC					18...30 V DC / 6 mA
Load (U_S = Supply voltage.; U_{min} = min. supply volt. 12 V)		$R_{max} = \frac{(U_L - U_{min})}{0.02A}$					≥ 5 kΩ
Linearity error (level transmitter)		±0.45% (≤20 mH_2O), ±0.25% (>20 mH_2O)			±0.25% (≤200 mH_2O), ±0.5% (>200 mH_2O)		
Temperature error		≤ ±0.1% / 10 K					≤ ±0.2% / 10 K

[1] mH_2O means: 1 m (3.3 ft) of water column (WC),1 mH_2O ~0.1 bar (1.45 psi). Accuracy specifications are not valid if the factory settings are changed.

		2-wire					3-wire
		NBB + NAB / NAG	NBK, NBP, NGK, NGP	NK□, NN□, ND□, NH□	NC□, NT□	NP□, NF□, NZ□, NR□	NPH, NFH, NZH, NRH
Thermal compensation error [1]		±0.2%			Not applicable	±0.2%	Not applicable
Process temperature		Normal: −30...+60 °C (−22...+140 °F); extended temperature range: FEP cable: −40...+80 °C (−40...+176 °F), PUR cable: –30...+70 °C (−22...+158 °F)					
Process connection		NAA–209 cable mounting wedge clamp, threaded types with ¾" BSP thread					
Ingress protection		IP68 (NEMA 6P equivalent)					
Electrical protection		Class III					
Electrical connection		Shielded cable with breathing capillary ∅7 mm (∅0.275")					
Wire cross-section		0.34 mm² (AWG 22)					
Cable length [2]		0...450 m (0...1476 ft)	0...300 m (0...985 ft)			0...450 m (0...1476 ft)	0...110 m (0...361 ft)
Dimensions		∅34 × 205 mm (1.34 × 8")	∅24 × 212 mm (∅1 × 8.3")	NK□, NN□: ∅22 × 173 mm (∅0.9 × 6.8") ND□, NH□: ∅38 × 174 mm (∅1.5 × 6.85")	∅40 × 146 mm (∅1.55 × 5.75")	NP□, NF□: ∅22 × 173 mm (∅0.9 × 6.8") NZ□, NR□: ∅38 × 174 mm (∅1.5 × 6.85")	
Weight		Probe: 205 g (0.45 lb) Connector head: 65 g (0.14 lb)	Probe: 200 g (0.44 lb)	NK□, NN□: probe: 200 g (0.44 lb) ND□, NH□: probe: 300 g (0.66 lb)	Probe: 400 g (0.88 lb)	NP□, NF□: probe: 200 g (0.44 lb) NZ□, NR□: probe: 300 g (0.66 lb)	
		Cable: PUR cable: 0.065 kg/m (0.044 lb/ft); FEP cable: 0.072 kg/m (0.048 lb/ft)					
Temperature measurement		–	NPD, NFD, NZD, NRD types: additional 2-wire transmitter; Output: 4...20 mA; supply voltage: 12...30 V DC; Operating range(3): 0...+60 °C (+32...+140 °F); accuracy: ±3 °C (±5.4 °F)				–
		–	N□P types: Pt100 sensor, 4-wire output; Resistance of the colorless insulated wires: 57 mΩ/m ±10%.				–
		For HART® types: can be queried as a secondary value, accuracy: ±3 °C (±5.4 °F).					
Material of wetted parts	Sensor	Al_2O_3 ceramic				1.4571 (316Ti eq.); 1.4435, 1.4404 (316L eq.)	
	Housing	POM-C	1.4571 (316Ti equivalent)				
	Cable coating	Polyurethane (PUR) / FEP					
	Seal	Viton® (FKM)					
	Protecting cap	POM-C	1.4571 (316Ti equivalent)		–	1.4571 (316Ti equivalent)	

[1] Valid if temperature compensation is active, can be switched in parameter HART - P10b. [2] As per order code.
[3] Extended temperature range: 0...+80 °C (32...+176 °F). Other available temperature ranges upon request: -40...+80 °C (-40...+176 °F); -30...+60 °C (-22...+140 °F); -10...+60 °C (14...+140 °F); 0...+40 °C (32...+104 °F); 0...+75 °C (32...+167 °F); 0...+80 °C (32...+176 °F); 0...+100 °C (32...+212 °F).

2.1 Accessories

- User Manual
- Warranty Card
- EU declaration of Conformity

2.2 Explosion Protection, Designation, Limit Values

2.2.1 ATEX Intrinsically safe protection (Ex ia) – ATEX Certificate No.: BKI25ATEX0012 X

Type	N□□–5□□–□[1] Ex	
Variant	Standard	Detachable
Supply voltage	12...30 V DC	
Ex marking	up to 100 m (328 ft) cable length: ⟨Ex⟩ II 1G Ex ia IIC T6 Ga; between 100 m (328 ft) and 300 m (985 ft) cable length: ⟨Ex⟩ II 1G Ex ia IIB T6 Ga	NBB–5□0–0 Ex: ⟨Ex⟩ II 1G Ex ia IIC T6 Ga
Reference document	npk411hu22h08-b	
Operation temperature	–30...+60 °C (–22...+140 °F)	
Intrinsically safe data	U_i = 30 V, I_i = 100 mA, P_i = 0.8 W	
	for IIC gas group: Ci ≤ 52 nF; Li ≤ 1.4 mH (calculated with 100 m [328 ft] integrated cable), **for IIB gas group:** Ci ≤ 132 nF; Li ≤ 1.6 mH (calculated with 300 m [984 ft] integrated cable)	NBB–5□0–0 Ex: Ci<12 nF + 0.4 nF/m cable, Li<1.3 mH + 0.9 µH/m cable (only to be used with NAB/NAG–40□–□ cable set)

[1] Except: NCH / NTH / NBH / NGH / NCD / NTD / NBD / NGD.

2.3 Order Code (Not all combinations are possible.)

2.3.1 Standard Variants

NIVOPRESS **N** □ □ – □ □ □ – □ [2]

Sensor / Cable material / Housing material	Code
Ceramic (capacitive)	
PUR / 1.4571	C[3]
FEP / 1.4571	T[3]
Stainless steel (piezoresistive)	
PUR / 1.4571	P
PUR / 1.4571 / ¾" threaded	Z
FEP / 1.4571	F
FEP / 1.4571 / ¾" threaded	R
Ceramic (piezoresistive)	
PUR / 1.4571	K
FEP / 1.4571	N
PUR / 1.4571 / ¾" threaded	D
FEP / 1.4571 / ¾" threaded	H
PUR / POM	B
FEP / POM	G

Output	Code
2-wire 4...20 mA + HART®	K
3-wire 0...10 V DC	H[3]
Level: 4...20 mA + HART® Temperature: 4...20 mA	D[3]
Level: 4...20 mA + HART® Temperature: Pt100	P

Version	Code
Standard NC	2
Standard	4
Ex ia G	5

Measuring range[4]	Code
0...1 mH_2O	1
0...2 mH_2O	2
0...5 mH_2O	3
0...10 mH_2O	4
0...20 mH_2O	5
0...50 mH_2O	6
0...100 mH_2O	7
0...200 mH_2O	8
0...350 mH_2O[3]	9[2]

Code	Cable length[5]			Code
0	0 m	Up to 100 m	0 m	0
1	10 m		1 m	1
⋮	⋮		⋮	⋮
9	90 m		9 m	9
A	100 m	Over 100 m	0 m	0
B	200 m		10 m	1
C	300 m		⋮	⋮
D	400 m[3]		90 m	9

[2] For explosion-proof devices, the article number is followed by "Ex" on the data plate.

[3] Ex version not available.

[4] mH_2O means: 1 m (3.3 ft) high water column (WC), 1 mH_2O ~0.1 bar (1.45 psi).

[5] Maximum cable length: 450 m (1476 ft).

2.3.2 Detachable Variants

Detachable Head Unit

NIVOPRESS **N** **B** **B** – ☐ ☐ **0** – **0** [2]

Sensor / Housing material	Code
Piezoresistive ceramic sensor / POM	**B**

Output	Code
2-wire 4...20 mA + HART®	**B**

Version	Code
Standard	**4**
Ex ia G	**5**

Measuring range[1]	Code
0...1 mH_2O	**1**
0...2 mH_2O	**2**
0...5 mH_2O	**3**
0...10 mH_2O	**4**
0...20 mH_2O	**5**
0...50 mH_2O	**6**
0...100 mH_2O	**7**
0...200 mH_2O	**8**

[1] For explosion-proof devices, the article number is followed by "Ex" on the data plate.

[2] mH_2O means: 1 m (3.3 ft) high water column (WC), 1 mH_2O ~0.1 bar (1.45 psi).

Detachable Cable Set

NIVOPRESS **N** **A** ☐ – **4** **0** ☐ – ☐

Cable material	Code
PUR	**B**
FEP	**G**

[3] Maximum cable length: 450 m (1476 ft).

Code	Cable length[3]			Code
0	0 m	Up to 100 m	0 m	**0**
1	10 m		1 m	**1**
⋮	⋮		⋮	⋮
9	90 m		9 m	**9**
A	100 m	Over 100 m	0 m	**0**
B	200 m		10 m	**1**
C	300 m		⋮	⋮
D	400 m		90 m	**9**

2.3.3 Accessories sold separately

NAA–101 – Cable terminal box	
Dimensions	93 × 93 × 55 mm (3.66 × 3.66 × 2.16")
Ingress protection	IP65 (NEMA 4 equivalent)
Operating temperature	−40...+70 °C (−40...+158 °F)
Material	Polycarbonate
Cable gland	M20×1.5 (cable outer diameter ∅5...∅10 mm [∅0.2...∅0.4"])
Electrical connection	Terminal block for cable with max. cross section of 2.5 mm² (AWG 13)

NAA–102 – Cable terminal box with overvoltage protection[1]	
Data	See: NAA–101
Electrical data	See: OVP

NAA–209 – Cable mounting wedge clamp	
Max. mechanical load	300 m (985 ft) cable
Operating temperature	−20...+60 °C (−4...+140 °F)

Sliding sleeve		
Type	NAA–105	NAA–106
Process connection	1½" BSP	1½" NPT

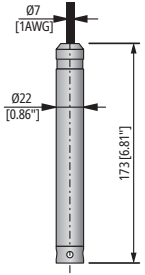
	Overvoltage protection	
	OVP–22S – OVP-22/33[1]	OVP–32S – OVP-32/33[1]
Mounting	outdoor	EN 60715 – 35 mm (1⅜") rail
Dimensions	72 × 42 × 19 mm (2.8 × 1.65 × 0.75")	62 × 65 × 18 mm (2.44 × 2.56 × 0.7")
Ingress protection	IP54 (NEMA 12 equivalent)	IP20 (NEMA 1 equivalent)
Breakdown voltage	33 V	
Absorbed energy	600 W / 1 ms	
Internal resistance	13 Ω	
Leakage current	≤ 10 µA	

Adapters	Type	Process connection	Material
Threaded spacers	EAA–153–0	¾" BSP – ½" BSP	1.4571 (316Ti equivalent)
	EAA–157–0	¾" BSP – M20×1.5	
	EAA–158–0	¾" BSP – 1" BSP	
	EAA–159–0	¾" BSP – 1" NPT	
Sewage adapters	NAW–104	Can be mounted in the place of the protective cap	POM
	NAW–107		
	NAZ–103	¾" BSP	1.4571 (316Ti eq.)

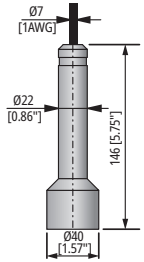
[1] Only for 2-wire 4...20 mA + HART® equipments.

2.4 Dimensions[1]

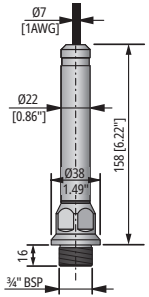
NP / NF / NK / NN transmitter



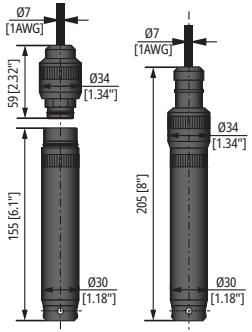
NC / NT transmitter



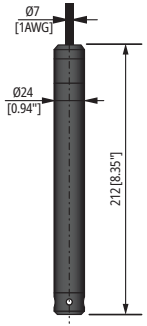
NZ / NR / ND / NH transmitter



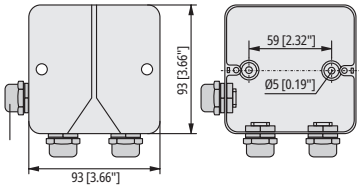
NBB Head unit + NAB / NAG cable set



NB / NG transmitter

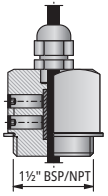


NAA–101, NAA–102 – Cable terminal box



terminal box features an
OVP-22/33 overvoltage protection unit

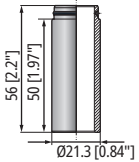
NAA–105, NAA–106 – Cable holding sliding sleeve



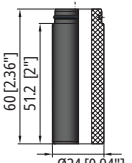
NAA–105: 1½" BSP
NAA–106: 1½" NPT

Sewage adapter

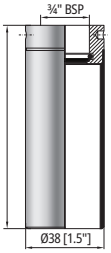
NAW–104



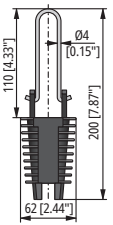
NAW–107



NAZ–103

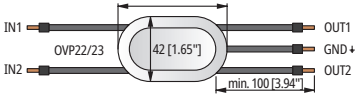


NAA–209 – Cable holding wedge clamp

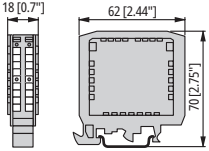


Overvoltage protection unit

OVP–22S – OVP-22/33



OVP–32S – OVP-32/33



[1] All units are in mm unless otherwise indicated.

3. INSTALLATION

To fasten the cable, use the NAA–209 cable mounting wedge clamp that provides a solution for hanging the cable without slipping and risk of rupture. The NAW–104 sewage adapter can be snapped in the place of the sensor protecting cap of types **NP☐, NF☐, NK☐, NN☐.** The NAZ–103 threaded sewage adapter can be used with types **NZ☐, NR☐, ND☐, NH☐.**

Installation steps

For detachable variants:

- The NBB head unit is equipped with a screw-on protective cap, which must always remain on the head unit until it is connected to the NAB/NAG cable set connector.
- The NAB/NAG cable set connector has a push-on protective cap, which must also remain in place until it is connected to the NBB head unit.

Assembling the Head Unit and Cable Set:

- Before assembly, remove the screw-on protective cap from the NBB head unit and the push-on protective cap from the NAB/NAG cable set connector. Ensure that no contamination reaches the protected parts after removing the caps, as this may result in device malfunction.
- Align the connector end of the NBB head unit with the NAB/NAG cable set connector. The NBB head unit has an alignment pin that must fit into the corresponding hole on the cable set connector. This ensures the correct positioning of the electrical connectors.
- Push the two parts together (until fully seated if necessary), then screw the union nut on the NAB/NAG cable set onto the threaded part of the NBB head unit. Finally, tighten the union nut fully.

For standard variants:

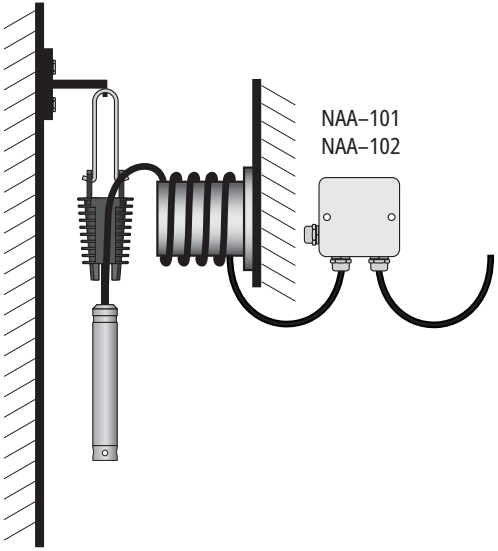
- The level transmitter cable must not be twisted. In the case of NZ☐, NR☐, ND☐, and NH☐ types with threaded connections, make sure the cable is not fixed before screwing the sensor into the appropriate process connection.
- Feed the special cable through the glands, set the proper cable length, and fasten the cable with the glands.
- Excess cable must be coiled on a pipe with a diameter of at least 100 mm (3.94"). The cable must not be shortened.
- Lower the probe to the lowest possible point, as only the liquid column above the probe will be measured.

To connect the breathing capillary and the signal cable, use the NAA–101 or NAA–102 cable terminal box (IP65, NEMA 4 equivalent), which accommodates the cable end in a dust- and humidity-free environment.
Attach the cable box (e.g., by using two M4 screws) to a flat surface. In open-air or industrial applications, the transmitter must be protected against transient surges and overvoltage. The GND of the OVP must be grounded with the shortest possible wire. In this case, install the NAA–102 terminal box (with OVP) close to the measurement location.

Mounting Example

Using additional overvoltage protection (**OVP–22/33, OVP–32/33**) at the opposite end of the cable, near the processing unit is recommended. Where a higher level of safety is required, a protective electrode improves the effectiveness of the electrical protection.

The OVP–22/33 and OVP–32/33 overvoltage protection units must not be used with Ex-rated devices.

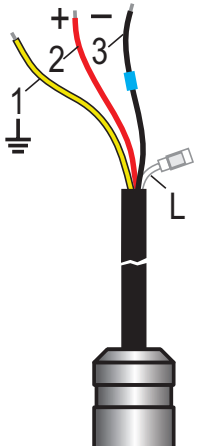
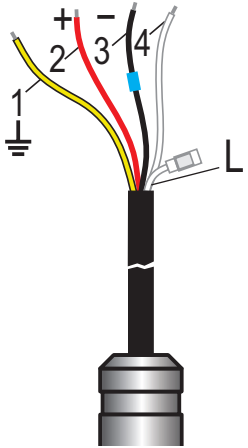
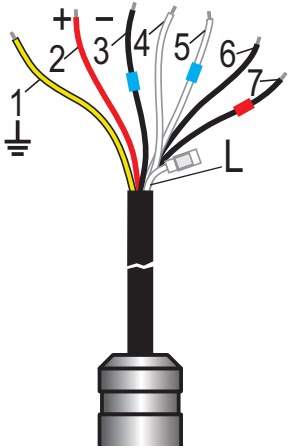
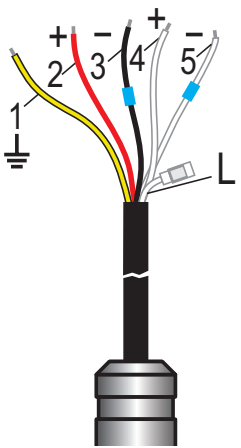


3.1. Terms and conditions for applications in drinking water supply (Only valid in Hungary.)

The NIVOPRESS NF☐ and NR☐ type probes are approved for this application.

- For components in contact with water intended for human consumption, the water temperature must not exceed +65 °C (149 °F) for public health reasons.
- The product is intended for use in drinking water, domestic hot water, bath water, and thermal water supply systems. Before each use, the hydrostatic level transmitter must be cleaned and disinfected in accordance with the relevant regulations applicable to the specific area of use. Cleaning should be carried out using a diluted acetic acid or sodium hypochlorite (hypo) solution, ensuring that the selected cleaning agent does not cause damage to the transmitter or its materials. The chemical agents used for cleaning and disinfection must comply with the following regulations: Government Decree 5/2023 (I.12.), Joint Decree 38/2003 (VII.7.) of the Ministries of Health, Agriculture, and Environment, Government Decree 316/2013 (VIII.28.).
- The pipeline section containing the product must be filled for at least one day with drinking water, domestic hot water, thermal water, or bath water. The flushing water must be discharged into the sewer system and must not be used for drinking or food preparation purposes. The intended operation of the pipeline section may only begin after this flushing process has been completed.
- In the first weeks following initial use of the product, leaching of metals and organic substances may occur. This is a temporary phenomenon and can be significantly reduced by frequent water changes and flushing.

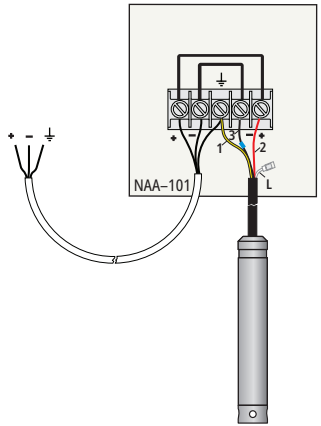
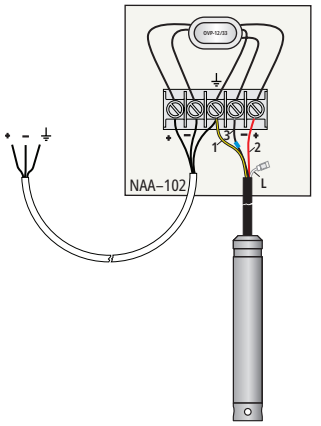
4. WIRING

2-wire level 4...20 mA	3-wire level 0...10 V	2-wire 4...20 mA + Pt100	4...20mA + HART® level + temperature
			

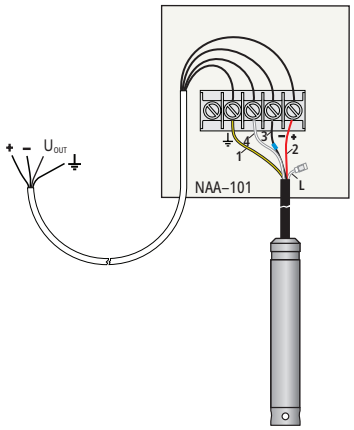
Legend

Cable core		Color
Shielding	**1**	Yellow
Positive power supply	**2**	Red
Negative power supply, Voltage output (-)	**3**	Black with an additional blue-colored insulation
NPH/NZH (3-wire) types: Voltage output (+); NPP/NZP types: Pt100 sensor current drive; NPD/NZD types: positive power supply of the temperature transmitter	**4**	Uncolored
NPP/NZP types: Pt100 sensor current drive; NPD/NZD types: negative power supply of the temperature transmitter	**5**	Uncolored + blue shrinkable tube
NPP/NZP types: Pt100 sensing	**6**	Black
NPP/NZP types: Pt100 sensing	**7**	Black / red tube
Breathing capillary with vapor filter	**L**	–

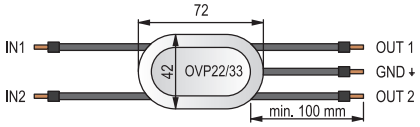
2-wire 4...20 mA

NAA–101	NAA–102
	

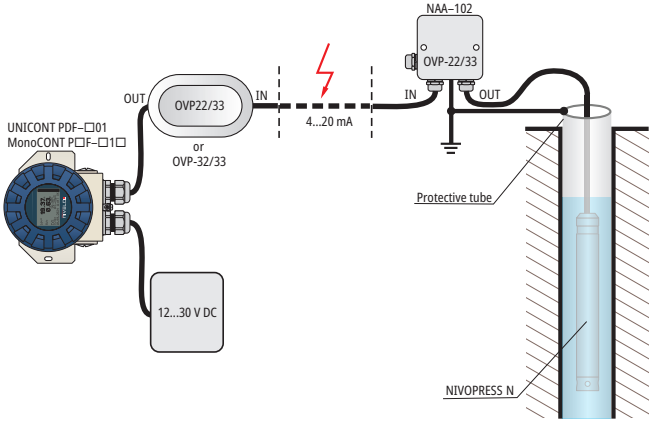
3-wire 0...10 V DC

NAA–101	OVP-32/33
	H G F E O_1 O_2 I_1 I_2 C D A B O_1 (F), O_2 (E) – outputs I_1 (C), I_2 (D) – inputs A, B, H, G – ground

Wiring of OVP-22/33



Installation example using Overvoltage Protection units



4.1 Special conditions of safe use

- In the case of detachable devices, the device can only be operated with (NAB/NAG–40☐–☐) type connection cables manufactured by Nivelco.
- The external enclosure of equipment with plastic housing is susceptible to electrostatic charging, and thus electrostatic charging must be prevented in potentially explosive atmospheres. Special care must be taken to ensure that the equipment is installed only in an environment free from direct airflow and any other charging effects, and that it is handled and cleaned only with neutral chemical antistatic wipes moistened with water.
- When using equipment with a metal housing, the metal housing is grounded through the connection cable. Avoid ground loops during use. Refer to the instruction manual for more information.
- Damage to the sensor may cause an explosion hazard and must be prevented! Make sure that the device is not overloaded with more than the maximal allowed pressure.
- If the device is installed in a place subject to overvoltage, it must also be equipped with overvoltage protection of at least overvoltage protection class II (in addition to the certified intrinsically safe isolation)!
- The equipment can only be used in the following ambient temperature range: –30...+60 °C (–22...+140 °F).
- The maximum length of the extension cable connected to the transmitter must be determined by considering the intrinsically safe limit data.
- Intrinsically safe devices may only be operated from a circuit that complies with the technical data of the device and is marked [Ex ia IIC] or [Ex ia IIB].

5. COMMISSIONING, CONFIGURATION

A properly installed and suspended probe needs some time to stabilize, which depends on the cable's length. With a 300 m (985 ft) cable, stabilization might take up to several hours, depending on the circumstances. The device is ready for operation as soon as it is switched on, but it can only measure accurately after the stabilization period. If you need to correct the insertion length, loosen the cable holder sliding sleeve, adjust the probe to the desired level, and fasten the cable holder sliding sleeve.

5.1 HART® output

HART®-capable transmitters can communicate with NIVELCO's MultiCONT universal process controller or through a HART®-USB modem with a PC using standard HART® commands; the devices can be programmed remotely with EView2 configuration software. The MultiCONT can power the transmitters, allows remote programming, and can transmit the measured values over an RS485 communication line if required. (See the details in the User's and Programming manual of MultiCONT). The current loop output of the units can also be configured with the EView2 software in the pressure range from 2% to 130%. If the measuring range is decreased, the resolution deteriorates, and the linearity error increases.

The damping time of the units can be also configured with the EView2 software or with any HART® standard programming interface. The damping time is the time constant of the output filter. Minimum value: 0 s; maximum value: 99 s.

5.2 Measuring the resistance of the Pt100 in the case of N□P types

If the resistance is measured using the 4-wire method, the current drive must be wires 4 (colorless) and 5 (colorless – blue tube). The voltage must be measured between wires 6 (black) and 7 (black – red tube).

If the resistance is measured using the 2-wire method, the resistance between wires 4 (colorless) and 5 (colorless – blue tube) must be measured. However, the resistance of the wire will also be included in the measured value.

5.3 Parameters and Programming

P0:- - - a (lowest) Pressure value assigned to 4 mA

P1:- - - a (highest) Pressure value assigned to 20 mA

P0 and P1 (lowest and highest) pressure values can be assigned to the 4 mA and 20 mA current loop output values. When changing the factory set values make sure that the entered values fall within the specified range of the pressure transmitter otherwise the device will indicate error.

FACTORY DEFAULT:
P0 = [minimum measurable pressure value of the sensor] **mmH_2O** (usually 0000)
P1 = [maximum measurable pressure value of the sensor] **mmH_2O** (usually the possible max. value of the measurement range)

P5: Medium density [g/cm^3]

Minimum value: 0.5 g/cm^3. Maximum value: 2 g/cm^3. (If thermal compensation is active, it is always determined by the density curve of water, regardless of the stored density value.) FACTORY DEFAULT: 1 g/cm^3.

P9: Current generator test (mA)

With this parameter the user can test the current loop output by entering a value between 3.9 mA and 20.5 mA and test it with an ammeter. **Warning:** the test mode can be canceled only by entering 0000 in P9.

P10:- - - a Measuring mode

a		Measuring mode
0	mbar	Pressure
1	psi	

a		Measuring mode
2	mm H_2O	Level (water head)
3	ft H_2O	
4	cm H_2O	
5	m H_2O	

FACTORY DEFAULT: 2

P10:- - b - Thermal compensation for water

Digit "b" of the P10 parameter toggles between normal and thermally compensated mode.

The thermally compensated mode applies to water medium and is only active for level measurement. In compensated mode, the current output, and PV is the compensated level. SV is the temperature. TV is always an uncompensated value, and QV is always a compensated value.

b	Thermal compensation
0	Level measurement without thermal compensation
1	Level measurement with thermal compensation

FACTORY DEFAULT: 0

P11: Temperature unit

32	Celsius
33	Fahrenheit

FACTORY DEFAULT: 32

P13: HART short address (Polling address)

If multiple HART®-capable transmitters are used in a loop, the instruments are distinguished by their polling addresses. If the polling address is 0 (default), the current output is 4...20 mA, and HART® communication works on the 4...20 mA current signal. Conforming to the HART® standard up to 15 HART® devices can be connected to a HART® loop with polling addresses between 1 and 15. For devices with a polling address between 1 and 15, the output current is fixed at 4 mA and only digital HART® communication is used. Instruments connected to the same loop must not have the same polling address, and none of them may be left at polling address 0.

FACTORY DEFAULT: 0

P24: Damping Time

The output damping time can be set. The damping time is the time constant of the output filter. The minimum value is 0 s, the maximum is 99 s.

FACTORY DEFAULT: 0

6. MAINTENANCE AND REPAIR

Maintenance

The orifices of the protective cap may become clogged, so they require periodic cleaning to remove surface deposits. Do not touch the sensor membrane during cleaning. The membrane cap of threaded probes must be taken off before cleaning, and the filter behind it must also be removed.

Repair

There are no user-serviceable parts in the device. For safety and warranty reasons, the device's internal parts may only be serviced by NIVELCO personnel. Refer to the warranty card for warranty information. The device returned for repair must be cleaned by the user, all chemical deposits must be removed, and the device must be disinfected before sending it back. In addition, the return package must include a properly filled Returned Equipment Handling Form, in which the sender declares that the device is free of all contamination and substances hazardous to health.

7. STORAGE CONDITIONS

Storage temperature: –10...+50 °C (+14...+122 °F)

Relative humidity: max. 85%

npk411en26h09
September 2026
Information is accurate to the best of NIVELCO's knowledge.
We reserve the right to change specifications at any time.