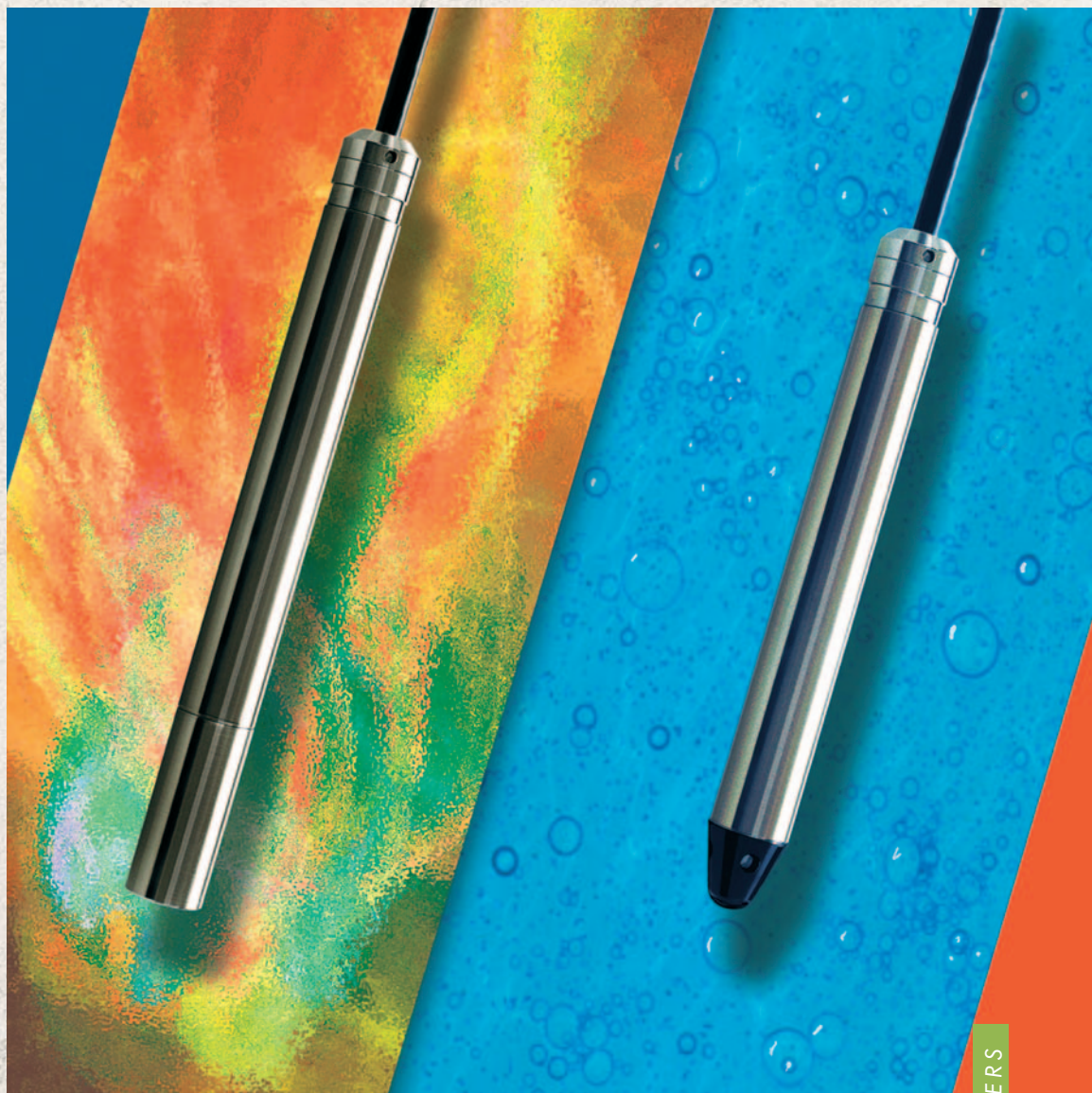


For clean water  
and sewage water

# NIVOPRESS N

HYDROSTATIC LEVEL TRANSMITTERS



LEVEL TRANSMITTERS

OUR PROFESSION IS YOUR LEVEL

LEVEL

## NIVOPRESS N HYDROSTATIC LEVEL TRANSMITTERS FOR CLEAN WATER AND SEWAGE APPLICATIONS

### FEATURES

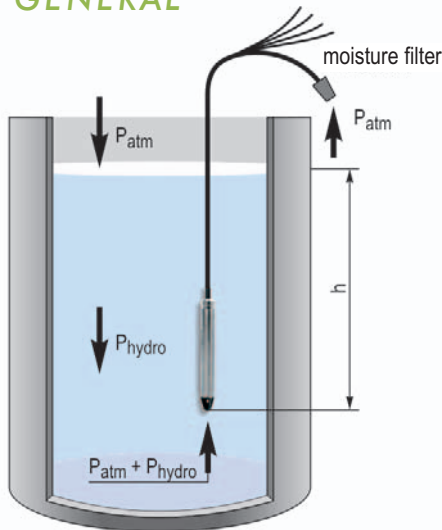
- Measuring range up to 200m
- Built-in Pt100 temperature sensor
- IP68 protection
- Submersible or screw-in types
- Ø22 mm tube
- HART communication
- 2- or 3-wire versions
- Ex versions
- 2 x 4...20mA output (level + temperature)
- Overvoltage and inverse polarity protection
- Wide range of accessories

### 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 contaminated liquids
- Sewage waters
- Draw-down protection
- Sewage lift station control



### GENERAL



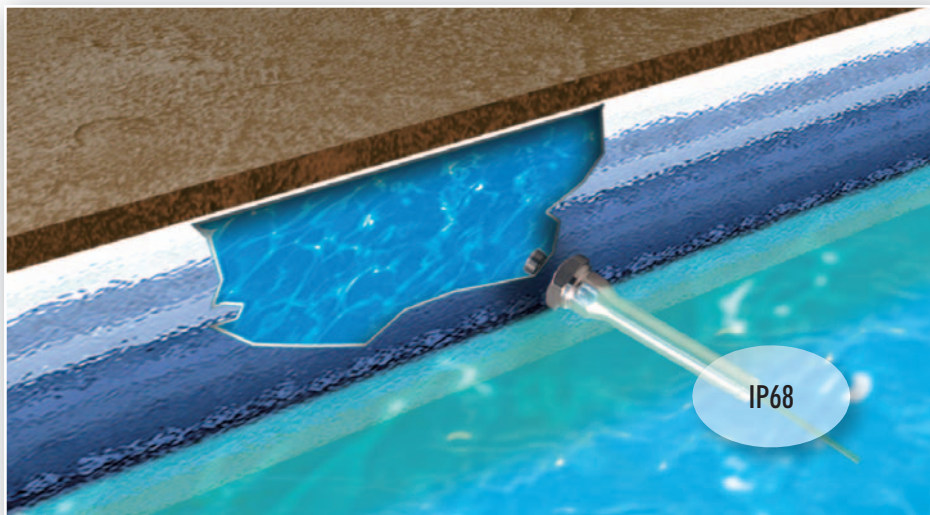
$$P = (P_{atm} + P_{hydro}) - P_{atm}$$

$$h = P$$

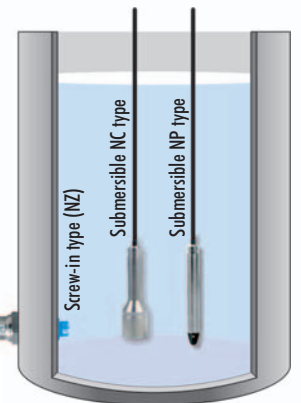
The **Nivopress N** hydrostatic level transmitters are designed to measure the level of clean or contaminated liquids. The pressure sensor at the bottom of the probe measures the sum of the hydrostatic pressure ( $P_{hydro}$ ) of the liquid column above it and the atmospheric pressure ( $P_{atm}$ ). 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 types are recommended for applications where there is a risk of flooding.

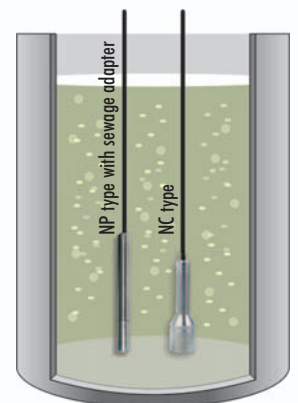
### APPLICATIONS



Screw-in type transmitter in places with risk of flooding



Hydrostatic transmitters for clean waters



Hydrostatic transmitters for contaminated waters

## TECHNICAL DATA

Type	2 wire		3 wire
	NP / NZ	NC	NPH / NZH
Measuring Range*	0 ... 200 m w.h.	0 ... 20 m w.h.	0 ... 200 m w.h.
	As order code, for units with HART output the range can be downscaled to 50% of the nominal range		
Overload allowed (versus range)	3 x	20x (h ≤ 3 m w.h.) 10x (h > 3 m w.h.)	3 x
Output	4 ... 20 mA + HART	4 ... 20 mA	0...+10V (0 V ≤ 80 mV) measured to the „-“ power supply
Power Supply	12 ... 30 V DC		18 ... 30 V DC / 6mA
Max. Load (U <sub>t</sub> = power supply; U <sub>min</sub> = min. power supply)	$R_{min} = \frac{(U_t - U_{min})}{0,02 \text{ A}}$		≥ 5 kohm
Linearity (level)			± 0,25 %
Temperature Error	≤ ± 0,1 % / 10 K		≤ ± 0,2 % / 10 K
Temperature transmitter <b>NPD, NZD</b> types	Power Supply: 12...30 VDC/4...20mA; 0...+60°C, Accuracy: ±3°C		
Temperature sensor <b>NPP, NZP</b> and <b>NCP</b> types	Pt100B, 4-wire		-
Process temperature**	-10 ... +60 °C	0 ... +60 °C	-10 ... +60 °C
Mechanical connection	<b>NZ</b> type 3/4" BSP thread	-	-
Ingress protection	IP 68		
Electrical protection	Class III.		
Electrical connection	Shielded cable with breathing capillary		
Cable	Ø 7 mm; 4x0.34 mm <sup>2</sup> Cu + 2x0.14 mm <sup>2</sup> St.		
Cable Length	0 ... 300 m as order code		
Dimensions	<b>NP:</b> Ø 22x179 mm <b>NZ:</b> Ø 38x158 mm	Ø40x146 mm	<b>NP:</b> Ø 22x179 mm <b>NZ:</b> Ø 38x158 mm
Mass	Probe: 0,2 kg	Probe: 0,4 kg	Probe: 0,2 kg
	Cable: ~ 0,06 kg/m		
Material of wetted parts	Sensor	1.4404	Al <sub>2</sub> O <sub>3</sub> ceramic
	Housing	1.4571	
	Cable coating	Polyurethane	
	Sealings	VITON (FKM)	


\* Measuring range can be given in bar also

\*\* Special order +75°C

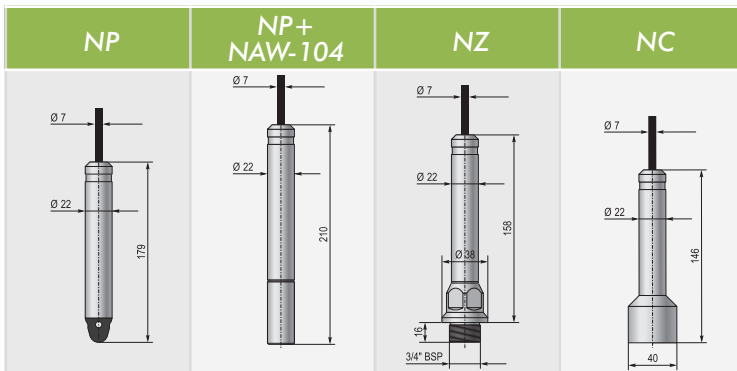
## ADDITIONAL DATA FOR 'EX' APPROVED MODELS

Type	NP / NZ – 500 types
Power supply	14...30 V DC
Ex marking	II 1G EEx ia IIC T6
Intrinsic safety	U <sub>i</sub> = 30 V, I <sub>i</sub> = 100 mA, P <sub>i</sub> = 0,8 W, C <sub>i</sub> = 12 nF + h x 0,04 nF; L <sub>i</sub> = 1.3mH + h x 0,9 µH (h = cable length)

## WIRING

Type	N□K	N□H	N□D	N□P
Cable core				
1 yellow	⊥	⊥	⊥	⊥
2 red	I <sub>+</sub>	U <sub>+</sub>	I <sub>+</sub>	I <sub>+</sub>
3 black/blue	I <sub>-</sub>	U <sub>-</sub>	I <sub>-</sub>	I <sub>-</sub>
4 uncolored	-	U <sub>out</sub>	-	
6 black	-	-	I <sub>-</sub> (°C)	 Pt100
7 black/red	-	-	-	
5 uncolored/blue	-	-	I <sub>+</sub> (°C)	
L breathing capillary	L	L	L	L

## DIMENSIONS



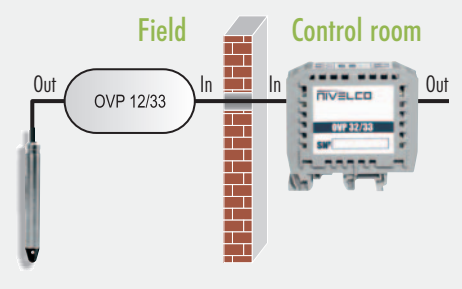
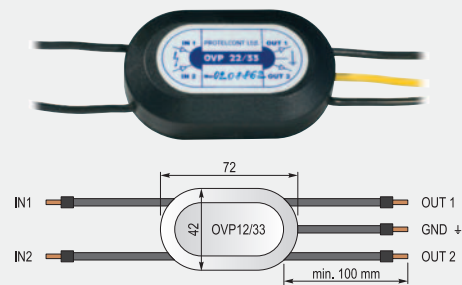
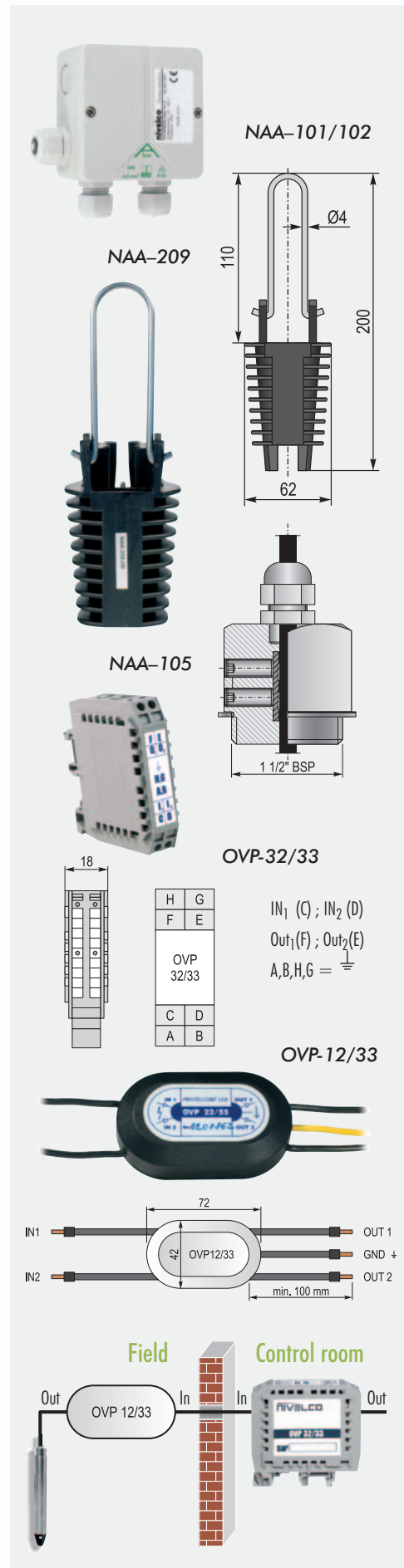
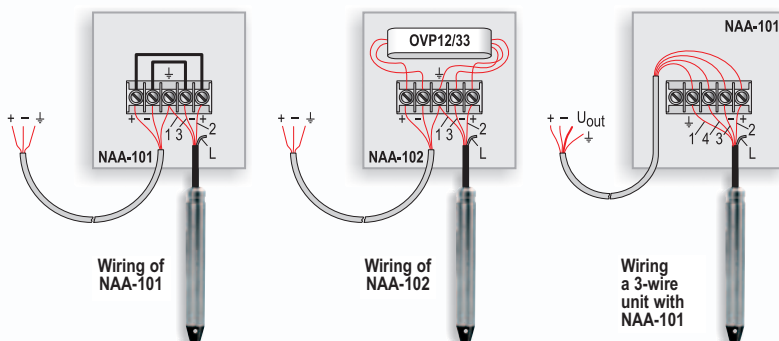
## ACCESSORIES

A wide range of accessories make an easier and safer installation and usage of the **Nivopress N** hydrostatic level transmitters.

### Technical data of the accessories

Cable terminal box	NAA-101	
Dimensions	93 x 93 x 55 mm	
Ingress protection	IP 65	
Operating temperature	-40 °C ... +70 °C	
Material	Plastic	
Cable gland	M20x1,5 (cable Ø 5... Ø 10 mm)	
Electrical connections	Terminal block for cable with max. cross section of 2.5 mm <sup>2</sup>	
Cable terminal box with overvoltage protection	NAA-102 *	
Data	See NAA-101	
Electrical Data	See OVP	
Cable mounting wedge clamp	NAA-209	
Max. mech. load	300 m cable	
Material	Polyamide	
Operating temperature	-20 °C ... + 60 °C	
Overvoltage protection unit	OVP12/33 *	OVP32/33 *
Type	field use	DIN 35 mm rail mountable
Dimensions	72 x 42 x 19 mm	62 x 65 x 18 mm
Ingress protection	IP 54	IP 20
Breakdown voltage	33 V	
Absorbed energy	600 W / 1 ms	
Serial resistance	13 ohm	
Leakage current	≤ 10 µA	

\* only for 2-wire 4...20mA equipments



## ACCESSORIES

**NAA-101:** Cable terminal box with moisture filter and terminals for wiring the unit

**NAA-102:** Cable terminal box with moisture filter and terminals and OVP-12/33 for wiring the unit

**OVP-12/33:** outdoor overvoltage protection unit with IP54 protection for use in 4..20 mA loop

**OVP-32/33:** indoor overvoltage protection unit with IP20 protection for use in 4..20 mA loop

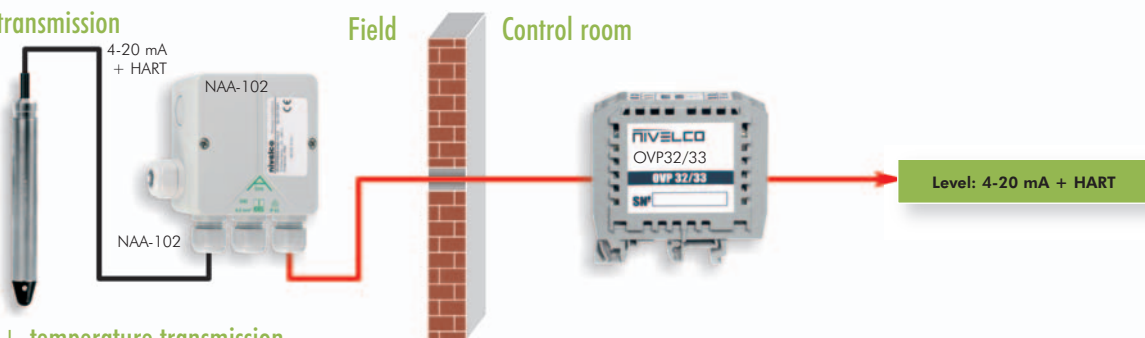
**NAA-209:** Cable mounting wedge clamp

**NAW-104:** Stainless steel 1.4571 sewage adapter for NP types

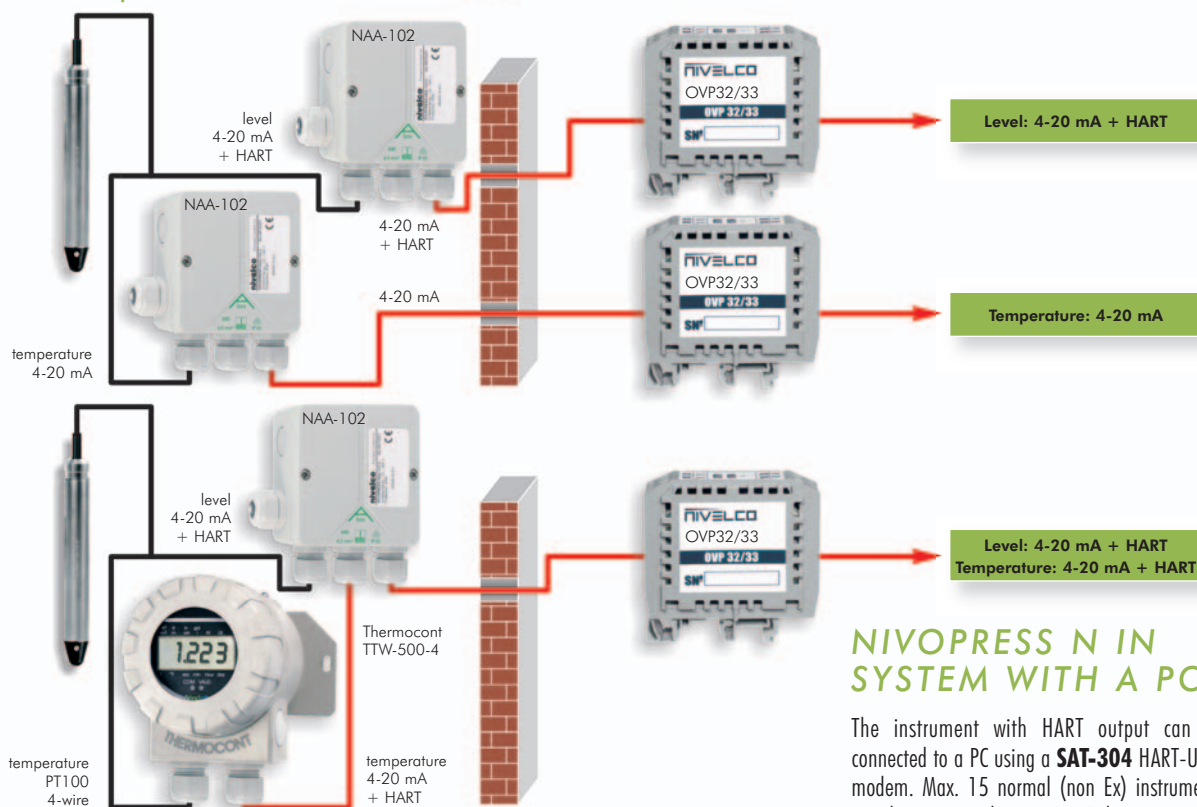
**NAA-105:** Cable holding assy; material: stainless steel 1.4571

## MEASURING CIRCUITS

### Level transmission



### Level + temperature transmission

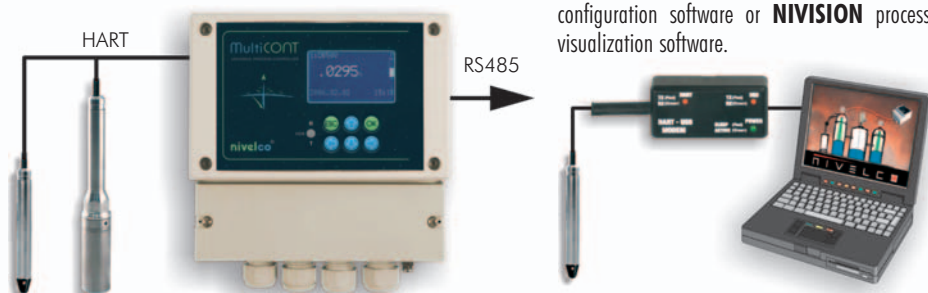


## NIVOPRESS N IN SYSTEM WITH A PC

The instrument with HART output can be connected to a PC using a **SAT-304** HART-USB modem. Max. 15 normal (non Ex) instruments can be connected to a HART line. Measured values can be visualised and/or the instruments can be programmed via digital HART communication. Applicable software: **NPCal** configuration software or **NIVISION** process visualization software.

## NIVOPRESS N IN SYSTEM WITH MULTICONT

MULTICONT can handle a max. of 15 normal or max 4 Ex-proof HART capable transmitters. The digital (HART) information is processed, displayed and if needed it can be transmitted via RS485 communication line to a PC. Remote programming of the transmitters is also possible. Visualisation on PC can be accomplished with **NIVISION** process visualization software.



## ORDER CODES (NOT ALL COMBINATIONS AVAILABLE)

### NIVOPRESS N hydrostatic level transmitters

NIVOPRESS N ■ ■ ■ - ■ ■ ■ - ■ <sup>1</sup>

Type	Code
Piezo	P
Piezo threaded	Z
Capacitance	C

Version	Code
Normal	2 <sup>2</sup>
Normal	4
Ex	5

Code	Cable length	Code
0	0 m	0
1	10 m	1
2	20 m	2
3	30 m	3
4	40 m	4
5	50 m	5
6	60 m	6
7	70 m	7
8	80 m	8
9	90 m	9

Output	Code
4...20 mA + HART <sup>3</sup>	K
0...10 V DC	H
Level: 4...20 mA + HART <sup>3</sup> Temperature: 4...20 mA	D
Level: 4...20 mA + HART <sup>3</sup> Temperature: Pt100B, 4-wire	P

Range <sup>4, 5</sup>	Code
0...1 m water h. (0...100 mbar)	1
0...2 m water h. (0...200 mbar)	2
0...5 m water h. (0...500 mbar)	3
0...10 m w. h. (0...1000 mbar)	4
0...20 m w. h. (0...2000 mbar)	5
0...50 m w. h. (0...5000 mbar)	6
0...100 m w. h. (0...10000 mbar)	7
0...200 m w. h. (0...20000 mbar)	8

Code	Cable length	Code
A	100 m	0
B	200 m	1
C	300 m	2
		3
		4
		5
		6
		7
		8
		9

<sup>1</sup> The order code of an Ex unit should end in 'Ex'

<sup>2</sup> Only with capacitive sensor

<sup>3</sup> Only N-400 series

<sup>4</sup> NC-200 series, max. 20m w.h.

<sup>5</sup> For HART capable units the range can be downscaled to 50% of the nominal range



#### Accessories to order

NAA-101	Cable terminal box with moisture filter
NAA-102	Cable terminal box with moisture filter and OVP 12/33
NAA-209	Cable mounting wedge clamp
NAW-104	Sewage adapter for NP types
NAA-105	Cable holding assy
OVP 12/33	Outdoor overvoltage protection unit
OVP 32/33	Indoor overvoltage protection unit
SAT-304	HART-USB modem for use with a PC