Thank you for choosing NIVELCO instrument
We are sure that you will be satisfied throughout its use!

NIPRESS

D□□-4□□-□

PRESSURE TRANSMITTER

User's manual

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1. APPLICATION

The **NIPRESS D-400** series pressure transmitters measuring pressure and converting it into voltage and current output can be used in 2- and 3-wire systems. The wide choice of the models makes it suitable for the most pressure measurement tasks whether relative or absolute pressure, static or dynamic measurement is required even at high temperatures. The series is available with two different accuracy classes.
Design of the transmitter, its overload capability and wide range of temperature and the possibility to install the unit in any position allows their application in the most different industrial circumstances. It is especially suitable for pressure measurement of contaminated mediums and at the bottom (level). Standard pressure transmitting fluid is silicone oil but on request unit with liquid acceptable in the food industry is also available. Transmitters can be delivered with plug in display UNICONT PLK-501 enabling on site reading.

2. TECHNICAL DATA

TYPE		D□□–4□□–□
Range		-1 – 400 bar (according to the order code)
Overload capability		According to the order code
Accuracy		±0.5%
		Optionally (0.4 bar ≤ P_N ≤ 40 bar): ±0.25%
Medium temperature		Filling fluid silicone oil: -40 °C … +125 °C High temperature version max. +300 °C
		Filling fluid food grade oil: -10 °C … +125 °C High temperature version max. +250 °C
		Usage in vacuum max. +150 °C
Ambient temperature		-40 °C … +85 °C -5 °C ... +70 °C (cable outlet without ventilation tube)
Sensing method		Piezoresistive
Materials of wetted parts	Sensor	1.4435 stainless steel (diaphragm)
	Sensor sealing	FKM (Viton, max. +200 °C), optional FFKM (recommended for medium temp. > +200 °C max. 100 bar), Dairy pipe, Tri-Clamp connection: without seals
	Process connection	Stainless steel: 1.4435 (316 L)
Housing		Stainless steel: 1.4404 (316 L)
Output		4 – 20 mA; 0 – 10 V
Power supply		4 – 20 mA output: 8 – 32 V DC 0 – 10 V DC voltage output: 14 – 30 V DC
Load resistance		4 – 20 mA 2-wire current output R_{max} = [(U_S – 8 V) / 0.02 A] Ω 0 – 10 V DC voltage output: R > 10 kΩ
Process connection		According to the order code
Electric connection		ISO 4400 connection, M12 x 1 (4-pin), and integral cable version
Ingress protection		IP65 (ISO4400) / IP67 (M12 x 1) / IP68 (integral cable version)
Electric protection		SELV Class III
Mass		~ 0.2 kg

2.1 ACCESSORIES

- User's Manual,
- Warranty Card,
- EU Declaration of Conformity

ADDITIONAL DATA FOR EX APPROVED MODELS (ONLY FOR 4 – 20 mA / 2-WIRE)

TYPE	D□□–4□□–6 Ex D□□–4□□–D Ex
Ex marking	Pending
Power supply	U_{supply}=10V … 28 VDC
Intrinsically safe data	Use only with Ex ia certified power supply! U_{imax} = 28 V DC, I_{imax} = 93 mA, P_{imax} = 660 mW, C_i ≈ 0 nF, L_i ≈ 0 mH The supply connections have an inner capacity of max. 27nF to the housing.
Permissible temperatures for environment	Zone 1, 2: -20 °C … +70 °C Zone 0: 0.8 bar ≤ P_{ATM} ≤ 1.1 bar : -20 °C … +60 °C

2.2 ORDER CODE (NOT ALL COMBINATIONS POSSIBLE!)

NIPRESS D □□ – 4 □□ – □

MEASUREMENT / TEMPERATURE	CODE
Relative / up to +125 °C	R
Absolute / up to +70 °C(2)	E
Relative / up to +150 °C high temperature(3)	H
Relative / up to +300 °C high temperature(3)	J

PROCESS CONNECTION	CODE
½" BSP (4)	B
½" BSP (5)	C
¾" BSP (2)	D
1" BSP	E
1 ½" BSP	F
¾" Triclamp (10)	T
1" Triclamp (7)	L
1 ½" Triclamp (8)	M
2" Triclamp (8)	N
Dairy pipe DN25(6) (11)	O
Dairy pipe DN40(6) (11)	P
Dairy pipe DN50(9) (11)	R
VARIVENT DN40/50 (14)	V

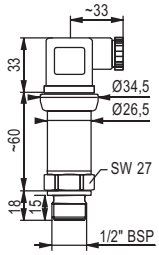
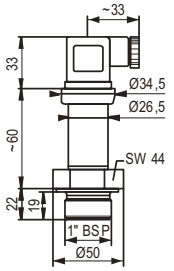
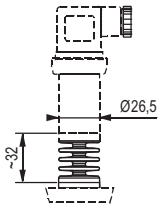
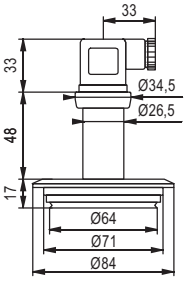
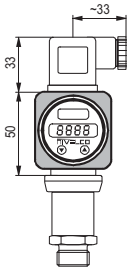
CODE	RANGE (OVERLOAD CAPABILITY) BAR(1)		CODE
0	-1 – 0 (5) (12)	0 – 10 (40)	A
1	0 – 0.1 (0.5)	0 – 16 (80)	B
R	0 – 0.16 (1)	0 – 25 (80)	C
2	0 – 0.25 (1)	0 – 40 (105)	D
3	0 – 0.4 (2)	0 – 60 (100)	E
4	0 – 0.6 (5)	0 – 100 (200)	F
5	0 – 1.0 (5)	0 – 160 (400)	G
6	0 – 1.6 (10)	0 – 250 (400)	H
7	0 – 2.5 (10)	0 – 400 (600)	J
8	0 – 4.0 (20)		
9	0 – 6.0 (40)		

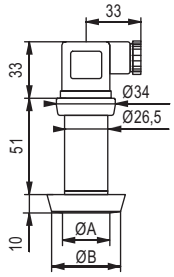
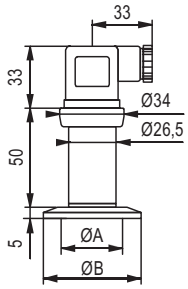
OUTPUT / EX	CODE
4 – 20 mA 2-wire	2
0 – 10 V 3-wire	3
4-20 mA 2-wire /Ex ia	6
4-20 mA 2-wire SIL2	C
4-20 mA 2-wire SIL2 /Ex ia	D

ACCURACY	CODE
0.25% (13)	1
0.5%	2

(1) *Special range on request*
(2) *p ≥ 0.6 bar*
(3) *Up to max. 160 bar*
(4) *p ≥ 1 bar*
(5) *From -1 bar to 40 bar, up to +125 °C, without media separator*
(6) *From 0.25 bar to 40 bar*
(7) *From 0.25 bar to 16 bar*
(8) *p ≤ 16 bar*
(9) *From 0.25 bar to 25 bar*
(10) *From 4 bar to 8 bar*
(11) *In accordance to DIN 11851*
(12) *Up to max. +150 °C*
(13) *0.4 bar ≤ p ≤ 40 bar*
(14) *p ≤ 25 bar*

2.3 DIMENSIONS

D□C – 4□□ – □ 1/2 " BSP FLUSH MEMBRANE	D□E – 4□□ – □ 1" BSP FLUSH MEMBRANE	DH□ – 4□□ – □ DJ□ – 4□□ – □ WITH COOLING ELEMENT	D□V – 4□□ – □ VARIVENT DN40/50	TRANSMITTER WITH PLK-501-2
				
D□D – 4□□ – □ 3/4" BSP FLUSH MEMBRANE	D□F – 4□□ – □ 1 1/2" BSP FLUSH MEMBRANE			

DAIRY PIPE DIN 11851			TRI-CLAMP			
						
TYPE	D□O– 4□□–□	D□P– 4□□–□	D□R– 4□□–□	D□T– 4□□–□	D□L– 4□□–□	D□M– 4□□–□	D□N– 4□□–□
DIMENSIONS	DN 25	DN 40	DN 50	3/4"	1"	1 1/2"	2"
A [mm]	23	32	45	14	23	32	45
B [mm]	44	56	68.5	25	50.5	50.5	64
P_N [bar]	≥ 0.25 ≤ 40	≥ 0.25 ≤ 40	≥ 0.25 ≤ 25	≥ 4 ≤ 8	≥ 0.25 ≤ 16	≤ 16	≤ 16

3. INSTALLATION

Due to its small size and weight NIPRESS D-400 can be directly installed on tanks, pipes, machines, etc. without mounting device.

To provide chance for replacement of the instrument during operation the use of closing armature is recommended. A simple ball valve will be suitable for lower pressures and for higher pressures (above 6 bar) a three-way blow-off needle-valve can be suggested.
For measuring hydrostatic pressure for level the unit should be thread in a stub at the tank wall possibly near to the bottom.
Using longer impulse tube its proper sloping for the necessary deaerating and emptying has to be ensured.

Measuring low pressures in systems with substantial height difference between the transmitter and place of measurement the hydrostatic pressure of the medium in the impulse pipe should be taken into consideration. In the case of outside installation, the unit is supposed to be protected against rain or splash water.

3.1 INSTALLATION REGULATION

Depending on the medium measured, the medium may cause hazard to the installer, therefore you should be wearing suitable protective clothing, gloves, and goggles.
For mounting and dismantling SW27 or SW44 open-end wrench should be used. Take care for the vulnerable flush face diaphragm.

The cylindrical housing of the transmitter should not be gripped and tightened with pipe wrench!

The plug-in electric connector can be unplugged after releasing and removing its fastening screw. The connection insert can be pushed out by a screw driver from the direction of the screw.

Pushing electric cable through the cable gland it can be connected to the relevant points of the connector. Make sure that the cable gland and sealing plate of the connector will be tight.

For the sake of noise suppression, the transmitter should be grounded. If the grounding of the appliance with the pressure transmitter is appropriate no further action will be needed. If not, the grounding should be performed.

Installation steps:

The specified tightening torques must not be exceeded!

Tightening torques:
1/4" BSP: max. 5 Nm; 1/2" BSP max. 10 Nm; 3/4" BSP: max. 15 Nm; 1" BSP: max. 20 Nm; 1 1/2" BSP: max. 25 Nm.

Mounting steps for connections according to DIN 3852:
Do not use any additional sealing material such as teflon tape! Check the o-ring is undamaged, it has a flawless and clean surface and seated in the designated groove. Screw the device into the corresponding thread by hand, and tighten the parts with a suitable torque wrench.

Mounting steps for dairy pipe connections (DIN11851):
Check the o-ring is undamaged, it has a flawless and clean surface and seated in the designated groove.
Centre the dairy pipe connection in the counterpart. Screw the cup nut onto the mounting part, then tighten it using a suitable wrench.

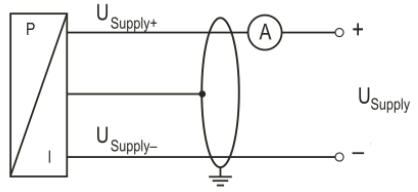
Mounting steps for Clamp and Varivent® connections:
Choose a suitable seal for the measured medium and pressure. Place the seal onto the corresponding mounting part. Centre the clamp connection or Varivent® connection above the counterpart with seal, then fasten the device with a suitable fastening element (e. g. half-ring or retractable ring clamp) according to the supplier's instructions.

3.2 CONDITIONS OF SAFE OPERATION

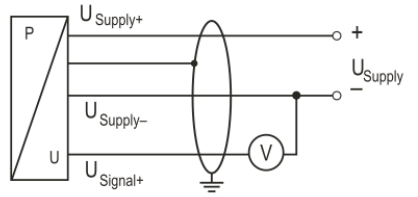
Before device turn on, make sure the installation is complete, and there are no visible defects. The device may only be used within the limitations specified in the technical specifications.
The device connector must be installed in such a way that the IP20 level of protection is always remain.
Ex ia certified transmitters can only be operated in qualified, certified and approved galvanically isolated intrinsically safe Ex ia circuits complying with the technical data and the device's explosion protection marking.
The metal housing of the device must be connected to the EP network.

4. WIRING

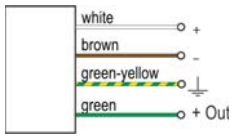
2-WIRE CURRENT OUTPUT



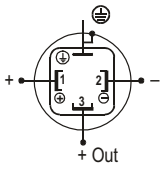
3-WIRE VOLTAGE OUTPUT



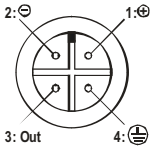
CONNECTION OF INTEGRAL CABLE



CONNECTION OF ISO 4400

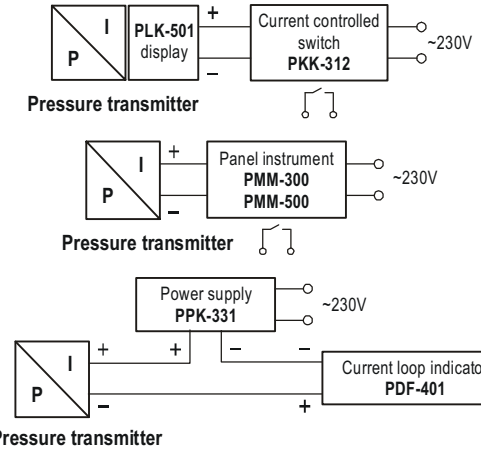


CONNECTION OF M12 x 1 / 4 pin

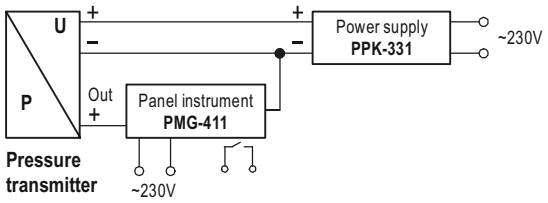


4.1 EXAMPLES OF ARRANGEMENTS

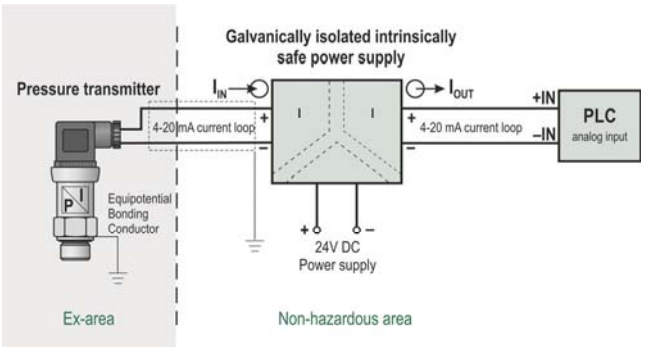
WIRING OF 2-WIRE PRESSURE TRANSMITTERS



WIRING OF 3-WIRE PRESSURE TRANSMITTERS



WIRING OF 2-WIRE Ex ia PRESSURE TRANSMITTERS



5. TROUBLESHOOTING

Fault	Possible causes	Fault detection / remedy
No output signal:	Connected incorrectly.	Check the connections!
	Conductor/wire breakage.	Check all wires with cable tester!
	Defective measuring device (signal input).	Check the amperemeter (and its fuse) and the analog input of the signal processing unit!
Analog output signal too low:	Load resistance too high.	Check the value of the load resistance!
	Supply voltage too low.	Check the power supply and power /current on the transducer / transmitter!
Slight shift of the output signal:	Diaphragm of senor is severely contaminated.	Cleaning with non-aggressive cleaning solutions, soft brush or sponge.
	Diaphragm of sensor is calcified or crusted.	It is recommended to clean carefully and remove dirt.
Large shift of the output signal:	Diaphragm of sensor is damaged (caused by overpressure or mechanically).	Check the diaphragm of the sensor, if it is damaged then send the device back to the manufacturer!

6. MAINTENANCE AND REPAIR

The instrument does not require regular maintenance. If necessary possible dirt deposited should be cleaned off. All repairs will be carried out at the Manufacturer's premises.

7. STORAGE CONDITIONS

Storage temperature: -40 °C ... +100 °C

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