
# NIVELCO NIPRESS DD-600 Differential Pressure Transmitter User Manual



**NIVELCO NIPRESS DD-600 Differential Pressure Transmitter**

Thank you for choosing a NIVELCO instrument!

Contents



## INTRODUCTION

The NIPRESS DD series differential pressure transmitters measure pressure and convert it into voltage or current. DD–600 family uses piezo resistive silicon sensor, has various measuring ranges up to 1000 mbar. Wall mounted design, suitable for measuring dry, non-aggressive gases and compressed air. This device is short circuit protected against inverse polarity as well.

The NIPRESS DD–600 can be used for a wide range of different HVAC applications. Its robust design can be used in laboratories or under industrial conditions. Preferred areas of use are heating, ventilation and air conditioning systems, clean room and medical technology, filtering technology and draft metering checks.

## TECHNICAL SPECIFICATION

### GENERAL DATA

| **Type** | **DD □ –6**oo □ □ □ |
|---|---|
| Measurement range | 0…1000 mbar according to the order code |
| Overload capability | According to the order code |
| Accuracy | for PN ≥ 6 mbar: ≤ ±0.5% of full-scale output for PN < 6 mbar: ≤ ±1% of full-scale output |
| Process temperature | 0…+50 °C (+32…+122 °F) |
| Ambient temperature | |
| Sensor type | Piezoresistive |

<table>
<tr><td rowspan="2">Materials of the wetted parts</td><td colspan="2">Sensor</td><td colspan="2">Piezoresistive silicon sensor</td></tr>
<tr><td colspan="2">Process connection</td><td colspan="2">Brass nickel plated, PVC / silicone tube (inside the device)</td></tr>
<tr><td colspan="3">Housing</td><td colspan="2">ABS</td></tr>
<tr><td colspan="3">Output</td><td colspan="2">current or voltage</td></tr>
<tr><td rowspan="3">Supply Voltage</td><td rowspan="2">2-wire</td><td rowspan="2">4…20 mA current output</td><td>Without automatic zero adjustment:<br>USupply = 11…32 V DC</td></tr>
<tr><td>With automatic zero adjustment:<br>USupply = 24…32 V DC</td></tr>
<tr><td rowspan="2">3-wire</td><td rowspan="2">0…10 V / 0…5 V<br>4…20 mA / 0…20 mA switchable output</td><td>Without automatic zero adjustment:<br>USupply = 19…32 V DC</td></tr>
<tr><td>With automatic zero adjustment:<br>USupply = 24…32 V DC</td></tr>
<tr><td rowspan="3">Load resistance</td><td rowspan="2">2-wire</td><td rowspan="2">current output</td><td rowspan="2">R = USupply -USupply min. ,[W]<br>max 0.02 A</td></tr>
<tr></tr>
<tr><td rowspan="2">3-wire</td><td>voltage output</td><td>Rmin = 10 kW</td></tr>
<tr><td>current output</td><td>Rmax = 330 W</td></tr>
<tr><td rowspan="2">Contact output (optional)</td><td>2-wire</td><td colspan="2">2x PNP open collector contact, max. 125 mA (short-circuit proof)</td></tr>
<tr><td>3-wire</td><td colspan="2">2x relay-output (NO/NC) 60 V DC, 40 V AC, max. 1 A</td></tr>
</table>

| | |
|---|---|
| Display (optional) | 2-line LCD display, visible range 32.5 x 22.5 mm (1.3 x 0.9″); 5-digit 7 segment main dis play, digit size 8 mm (3.15″), range of indication: ±9999; 8-digit 14 segment additi onal display, digit size 5 mm (0.2″); 52 seg ment bargraph; accuracy: 0.1% ±1 digit |
| Process connection | According to the order code |
| Electrical connection | Cable gland M16x1.5 |
| Ingress protection | IP54 |
| Electric protection | Class III (SELV) |
| Weight | ~165 g (0.36 lb) |

**ACCESSORIES**

- User’s manual
- Warranty Card
- EU Declaration of Conformity

**ORDES CODE (NOT ALL COMBINATIONS POSSIBLE!)**

NIPRESS D D □ – 6 □ □ – □

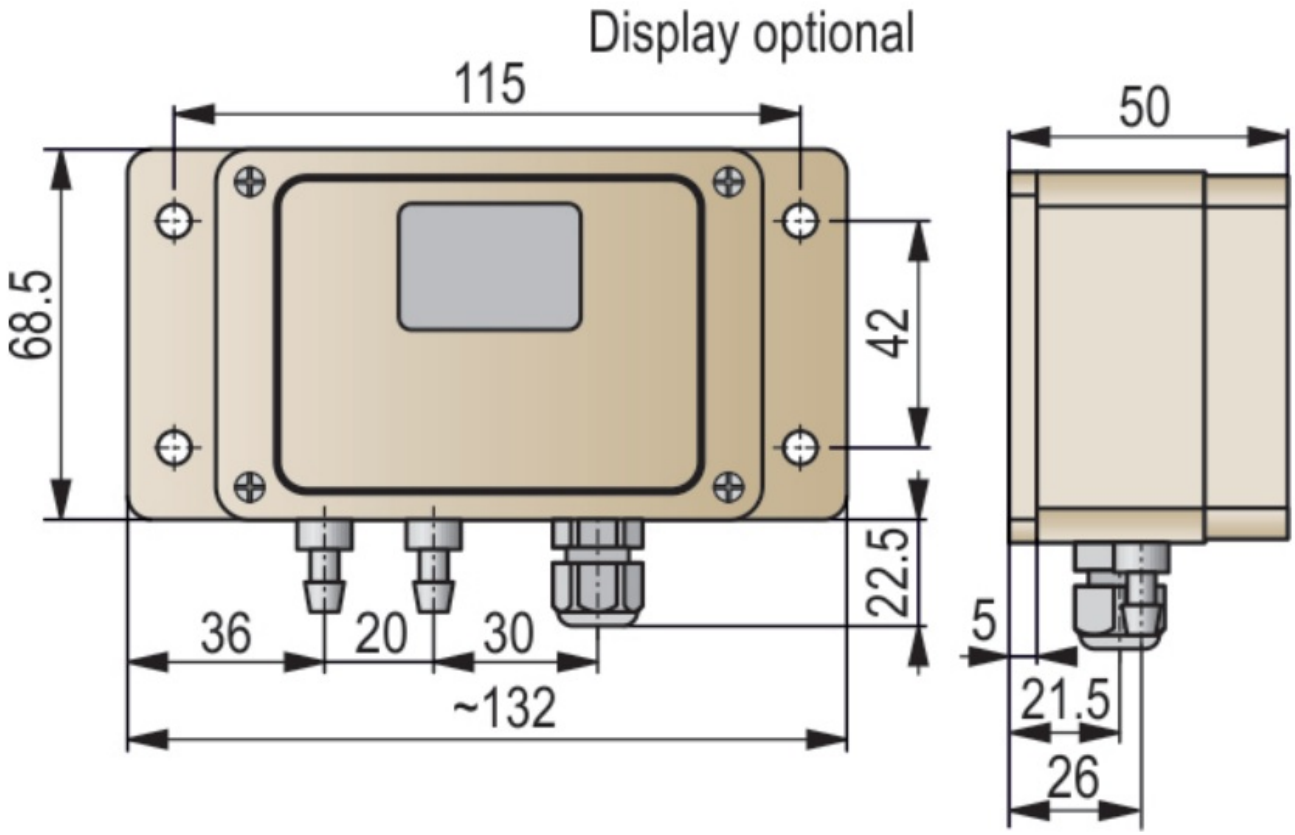
| PROCESS CONNECTION | CODE |
|---|---|
| Ø6.6 x 11; for flex tube Ø6 | P |
| Ø4.4 x 10; for flex tube Ø4 | R |

| MEASURING RANGE / (MAX. STATC PRESSURE) mbar | CODE |
|---|---|
| 0…1.6 / 200 | R |
| 0…4 / 200 | S |
| 0…10 / 200 | 2 |
| 0…40 / 345 | 6 |
| 0…250 / 1000 | C |
| 0…1000 / 3000 | F |

| ACCURACY | CODE |
|---|---|
| 1% (p ≥ 6 mbar) | 3 |
| 2% (p < 6 mbar) | 5 |

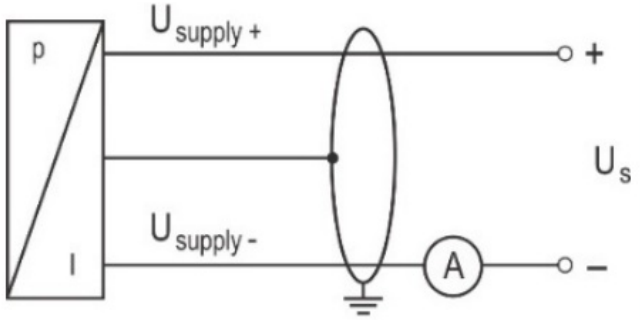
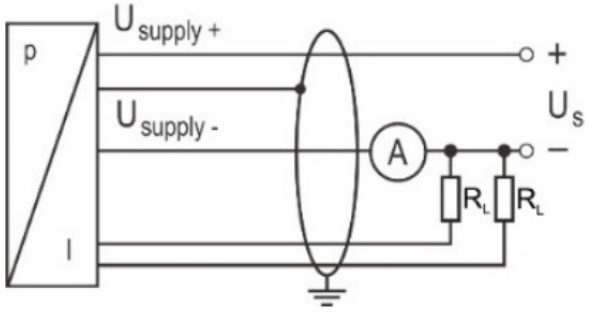
| OUTPUT | CODE |
|---|---|
| 4…20 mA, 2-wire | 2 |
| 0…10 V, 3-wire | 3 |

**DIMENSIONS**



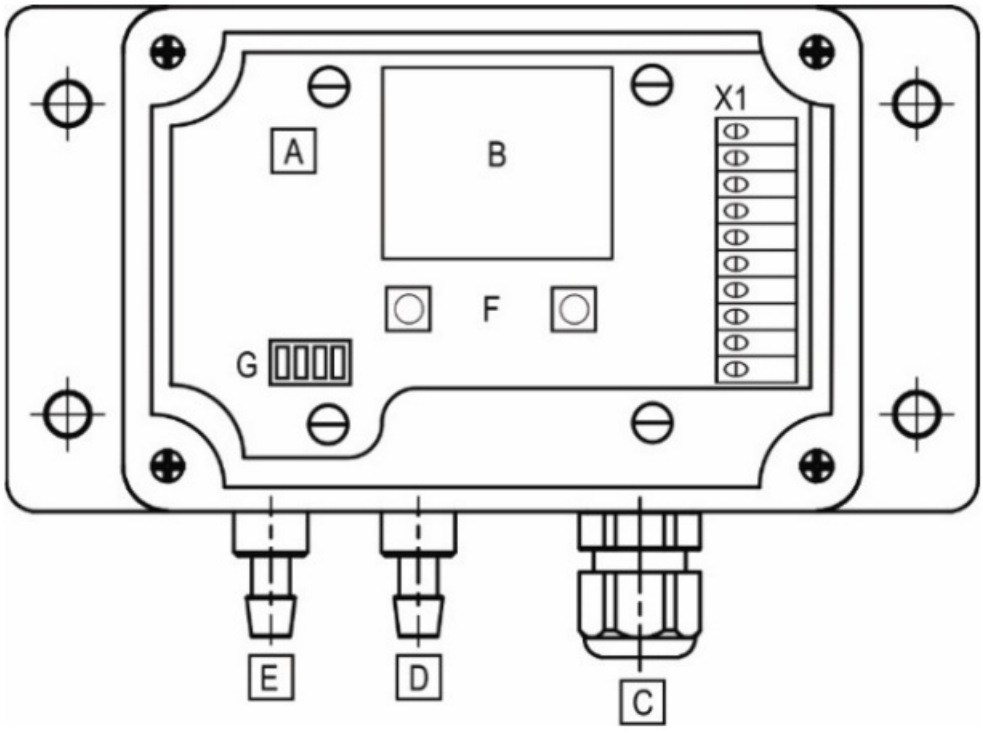

**INSTALLATION INSTRUCTION**

The device has been calibrated in vertical position, when process connections are oriented downwards. If it is differently mounted, a tiny deviation from zero point may appear at. This deviation can be compensated by the “A” potentiometer. This setting does not change the calibration of the device. In case of outdoor installation, we suggest to use protective cover against moisture and splashy water to avoid any potential failures due to inadequately tightened screws.

| 2-wire current output | 2-wire current / voltage output with 2 contacts |
|---|---|
|  |  |

| Wiring | X1 terminal strip 2-wire system |
|---|---|
| | **2-wire 4 – 20 mA** |
| USupply+ | 1 |
| USupply – | 2 |
| Signal1 | 3 |
| Signal2 | 4 |

- A. Potentiometer to adjust damping. The damping of the device can be set by turning a size 2 Phillips screwdriver in the area of 0 – 5000 ms.
- B. Display (Optional)
- C. Cable Gland M16x1.5
- D. Negative pressure connection
- E. Positive pressure connection
- F. Menu buttons for zeroing: keep on pressing the left menu button for at least 1 second.
- G. Configuration Switching (see 5.1 Configuration Switch)




**Install the device only in depressurized and disconnected state!**

After removing the front cover pull the cable through the gland and connect it to the X1 terminal strip with correct wiring. Tighten the gland screw firmly for proper sealing. Once the wires connected, reinstate the front cover.

**Attention**! Do not blow into the pressure ports! This may damage the device.

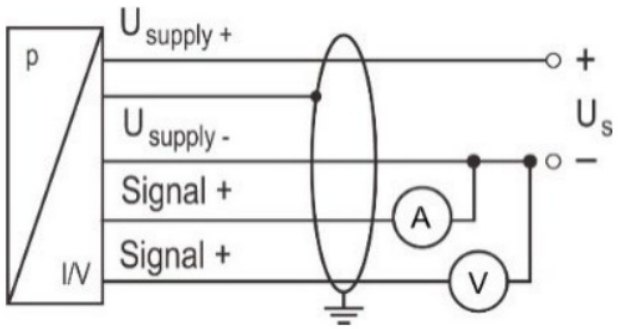
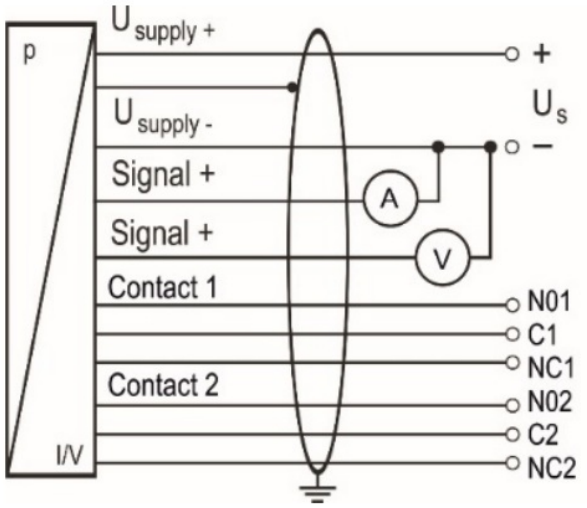
**Initial start-up**

After turning on the power supply, the output signal can be measured. Variations in the output signal may have two possible causes:

1. The idling of the sensor is about 30 min. After this period, the sensor signal should be stable for zero pressure difference and constant ambient temperature.
2. For small pressure ranges, slight deviation from the zero-point due to ambient conditions may occur. This error can be corrected by adjusting the zero-point potentiometer of the sensor after the idling time is passed. (Set the output signal of the sensor to the nominal value with both pressure inputs open.)

**WIRING**

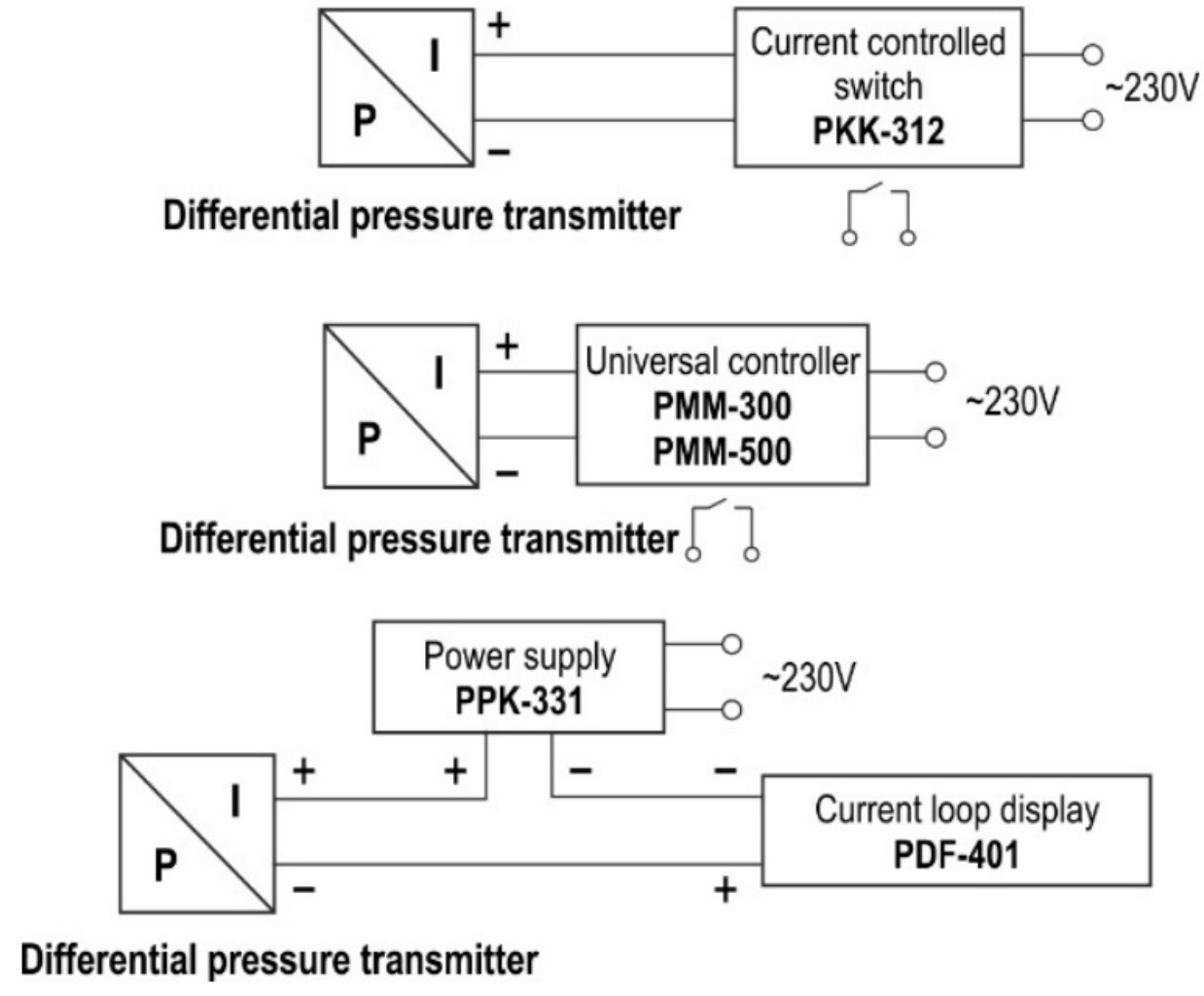
An accidental touch of the inner terminal strip may cause electrostatic discharge which may result in the failure of the device. To avoid this, please touch any grounded points before opening the device.

| 3-wire current output | 3-wire current / voltage output with 2 contacts |
| --- | --- |
|  |  |

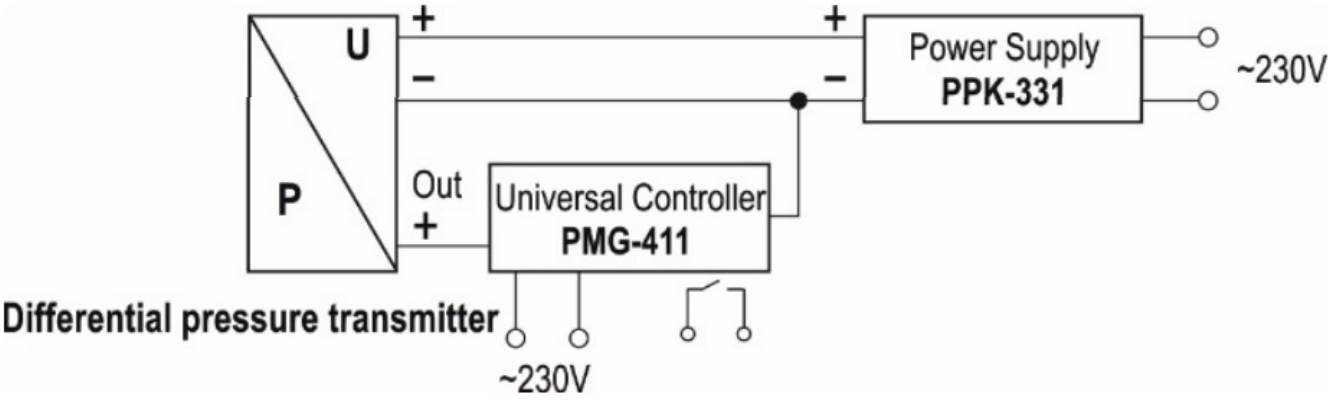
| Wiring | X1 terminal strip 3-wire system |
|---|---|
| | **3-wire 0 – 10 V / 0 – 20 mA** |
| NO2 | 1 |
| C2 | 2 |
| NC2 | 3 |
| NO1 | 4 |
| C1 | 5 |
| NC1 | 6 |
| USupply – | 7 |
| USupply+ | 8 |
| IOUT | 9 |
| UOUT | 10 |

**EXAMPLES OF ARRANGEMENTS**

Wiring of 2-wire differential pressure transmitters



Wiring of 3-wire differential pressure transmitters




## PROGRAMMING

### CONFIGURATION SWITCH

#### 3-wire system

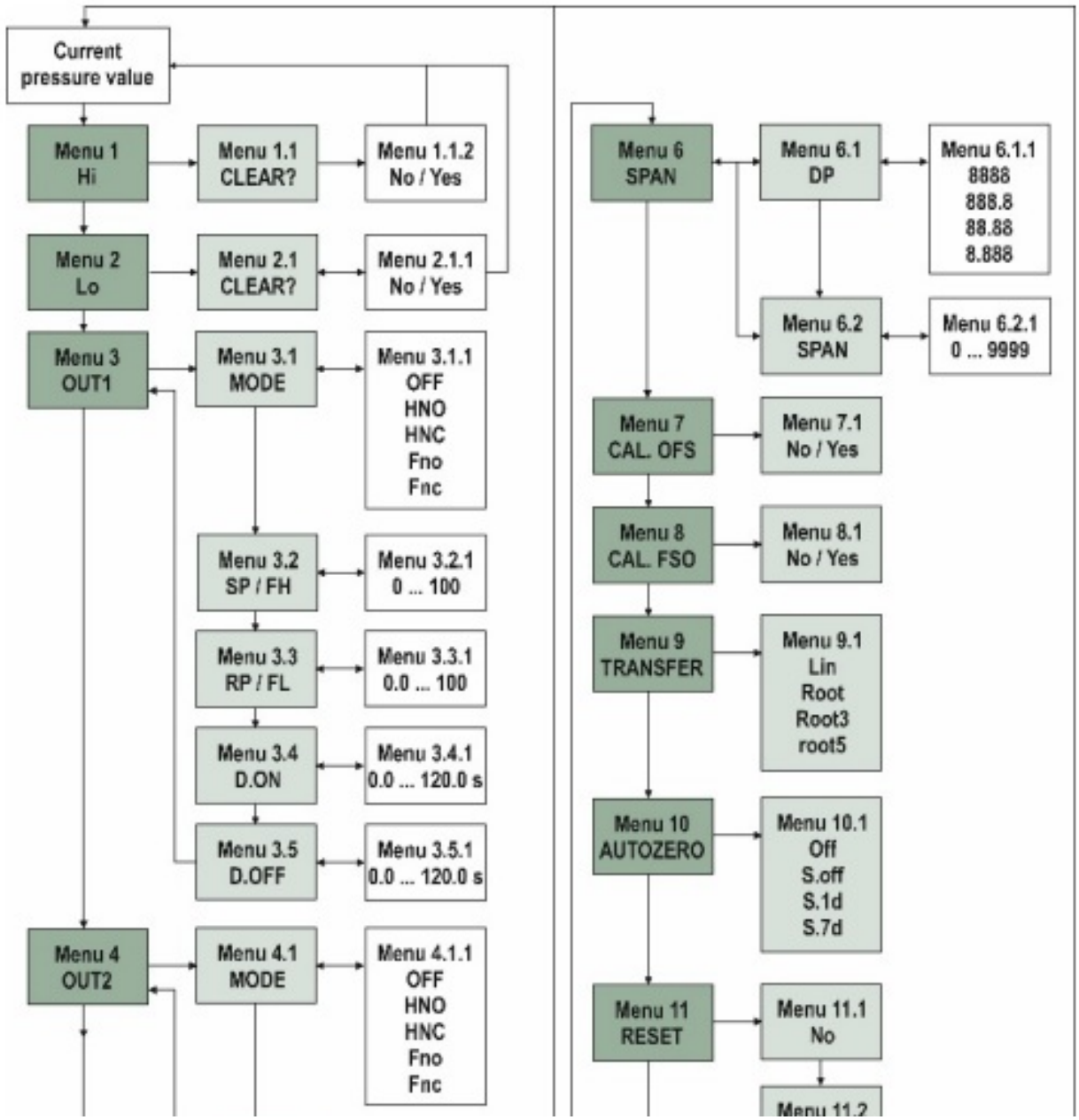
| 1 | 2 | 3 | 4 | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | **Off** | 0 – 10 V / 0 – 20 mA | | | | |
| | | | **On** | 0 – 5 V / 4 – 20 mA | | | | |
| | | **Off** | Automatic zero adjustment off | | | | | |
| | | **On** | Zero adjustment active at start and for 24 h | | | | | |
| **Off** | **Off** | | Nominal pressure range | | | | | |
| | | | 1.6 | 4 | 10 | 40 | 250 | 1000 |
| **On** | **Off** | | Customized ranges | | | | | |
| | | | 1.0 | 2.5 | 6 | 25 | 60 | 400 |
| **Off** | **On** | | | | | | 160 | 600 |

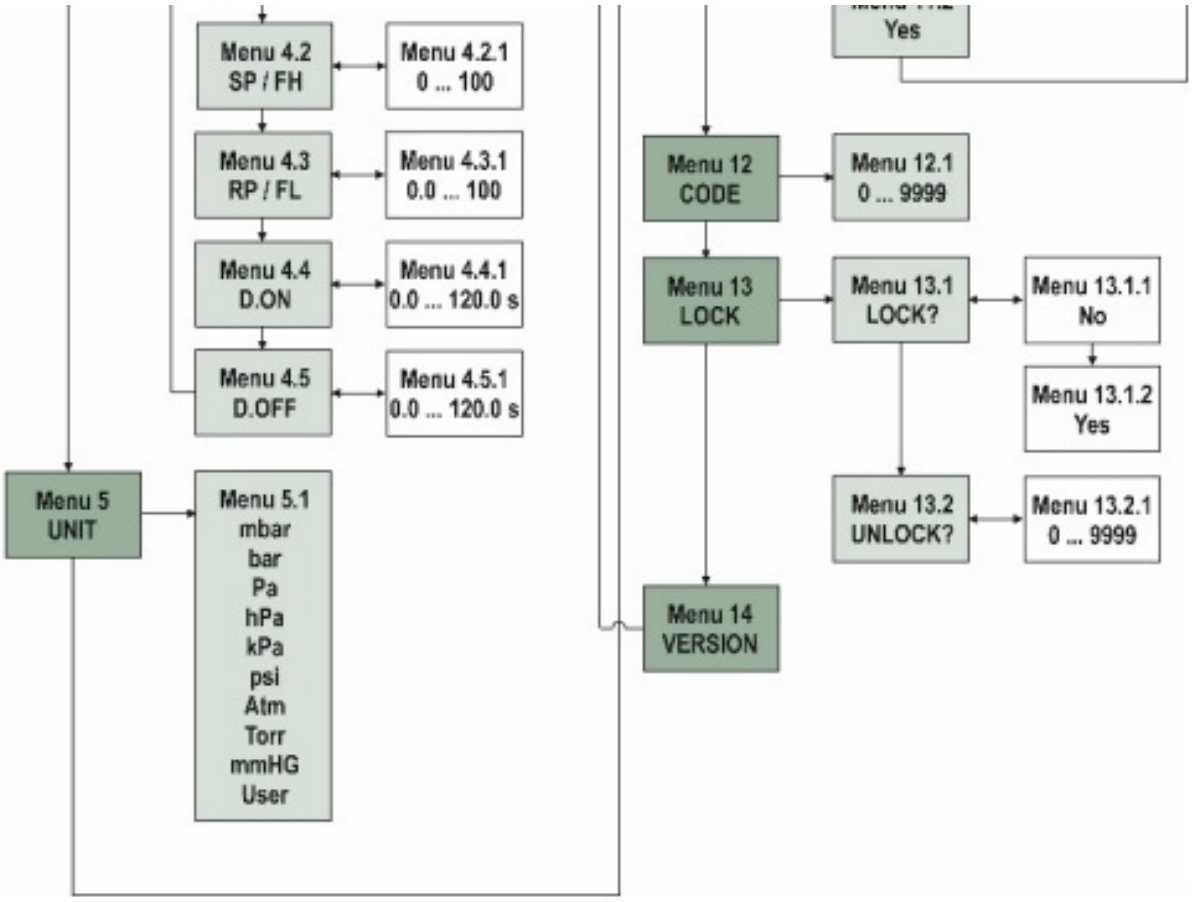
#### 2-wire system

| 1 | 2 | 3 | 4 | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Off | Off | Automatic zero adjustment off | | | | |
| | | On | Off | Zero adjustment active at start | | | | |
| | | Off | On | Zero adjustment active at start and for 24 h | | | | |
| | | On | On | Zero adj. active at start, then every 7 days | | | | |
| Off | Off | | | Nominal pressure range | | | | |
| | | | | 1.6 | 4 | 10 | 40 | 250 | 1000 |
| On | Off | | | Customized ranges | | | | |
| | | | | 1.0 | 2.5 | 6 | 25 | 60 | 400 |
| Off | On | | | | | | | 160 | 600 |

Switches 1 and 2 don’t have any functions at special pressure ranges.

**STRUCTURE OF THE MENU SYSTEM**






**DESCRIPTION OF THE MENU SYSTEM**

| **Menu** | **Description** |
|---|---|
| Activation | By pressing the right-hand key. |
| **Menu 1**<br>HI | **Displays the maximum value since the previous start** Available option: Delete value (CLEAR no / yes) (deletes the upper and lower maximum value)<br>To delete the value: Press the left-hand key ►A “CLEAR?” message start flashing in the bottom line, while in the upper line a “no” message is displayed; you can select between “yes” and “no” with the right-hand key. Confirm the selection with the left- hand key. |
| **Menu 2**<br>Lo | **Displays the minimum value since the previous start** Available option: Delete value (CLEAR no / yes) (deletes the upper and lower minimum value)<br>To delete the value: Press the left-hand key ► A “CLEAR?” message start flashing in the bottom line, while in the upper line a “no” message is displayed; you can select between “yes” and “no” with the right-hand key. Confirm the selection with the left- hand key. |

| | | |
|---|---|---|
| **Menu 3** / **4**<br>OUT<br>1 / 2 | MODE | **Menu only activated with contacts**<br>• Off Deactivated<br>• Hno Hysteresis, normally open<br>• Hnc Hysteresis, normally closed<br>• Fno Window, normally open<br>• Fnc Window, normally closed<br>OUT flashing in the bottom line, in the upper line the current setting is displayed, e.g. “Hno”; the contacts can be selected with the right-hand key. Confirm the sele ction with the left-hand key. |
| | SP<br>FH | **Values for set points in %**<br>Setting the set points: press the left-hand key ► “SP %” message start flashing i n the bottom line, while in the upper line the current value is displayed; it is possi ble to change the value with the right-hand key. Confirm the selection with the left -hand key. |
| | RP<br>FL | **Values for reset points in %**<br>Setting the reset points: press the left-hand key ► “RP %” message start flashing in the bottom line, while in the upper line the current value is displayed; it is possi ble to change the value with the right-hand key. Confirm the selection with the left -hand key. |
| | D. ON | **Turn-on delay in s**<br>Timing the turning-on of the device delay: press the left-hand key ►”D. ON s” m essage start flashing in the bottom line, the current value is displayed in the uppe r line; it is possible to change the value between 0.0 – 120.0 with the right-hand k ey. Confirm the selection with the left-hand key. |
| | D. OFF | **Return switching delay in s**<br>Setting the return switching delay: press the left-hand key ► “D. OFF s” message start flashing in the bottom line, while in the upper line the current value is displayed; it is possible to change the value between 0.0 120.0 with the right-h and key. Confirm the selection with the left-hand key. |
| **Menu 5**<br>UNIT | | **Setting the pressure unit**<br>Units which can be set: [mbar], [bar], [Pa], [hPa], [kPa], [psi], [Atm], [torr], [mmHG ], or [user] (if the USER unit is selected, the maximum display value that is show n can be set under the menu item span)<br>Setting the unit: press the left-hand key ► “unit” message start flashing in the bot tom line, while in the upper line the currently set unit is displayed; the unit can be selected with the right-hand key. Confirm the selection with the left-hand key. |

| | |
|---|---|
| **Menu 6**<br>SPAN | **Span value for display can be set when the user unit is selected**<br>Setting DP / SPAN: press the left hand key ► “SPAN” is displayed in the lower li ne, the currently set value is displayed in the upper line; by pressing the left hand button again, “DP” flashes in the lower line, 8.888, e.g. is displayed in the upper l ine, the decimal point can be adjusted with the right hand key, 88.88 e.g. Confirm the selection with the left hand key. “SPAN” message start flashing in the bottom l ine, while in the upper line the currently set value is displayed; the position can b e selected with the left-hand key, the corresponding numerical value can be chan ged with the right-hand key, the selection is confirmed with the left-hand key. |

| **Menu** | **Description** | | |
|---|---|---|---|
| Activation | By pressing the right-hand key. | | |
| **Menu 7**<br>Cal. OFS | **Calibration of the Offset to the current value**<br>(only for basic versions without automatic zeroing and square root extraction)<br>Calibration of the Offset: Press the left-hand key ► “CAL. OFS?” message s tart flashing in the bottom line, while in the upper line the “no” message is displa yed; you can select between “yes” and “no” with the right-hand key. Confirm the s election with the left-hand key. | | |
| **Menu 8**<br>Cal. FSO | **Calibration of the endpoint** (display and analogue output) to the current pressure level.<br>Calibration of the endpoint: Press the left-hand key ►”CAL. FSO?” message star t flashing in the bottom line, while in the upper line “no” message is displayed; yo u can select between “yes” and “no” with the right-hand key. Confirm the selectio n with the left-hand key. | | |
| **Menu 9**<br>TRANSFER | **Square-root extraction output signal**<br>(only at square root extraction versions with LCD display) | | |
| | Lin | Standard – Linear | |
| | root | y = x^0.5 | cut off 0 – 10% |
| | root3 | y = x^1.5 | |
| | root5 | y = x^2.5 | |
| **Menu 10**<br>AUTOZERO | **Menu only visible if zeroing value is visible** (Value is read- only! Setting only p ossible via configuration switch.)<br>(only at automatic zeroing versions) | | |
| | Off | no automatic zero adjustment | |
| | S. | upon switching the device on | |
| | S. 1d | upon switching on and after 24 hours | |
| | S. 7d | upon switching on and after 7 days | |

| | |
|---|---|
| **Menu 11**<br>RESET | **Resets all menu settings to factory preset**<br>Reset: Press the left-hand key ►the message “RESET” message start flashing i n the bottom line, while in the upper line “no” message is displayed; you can sele ct between “yes” and “no” with the right-hand key. Confirm the selection with the l eft- hand key. |
| **Menu 12**<br>CODE | **Activate locking code**<br>set all values (zero is not applicable) and confirm. Menu point<br>“LOCK” is displayed. |
| **Menu 13**<br>LOCK | **Lock / UNLOCK menu**<br>LOCK? you can select between “yes” and “no” with the right- hand key. Confirm t he selection with the left-hand key. With YES the menu is closed immediately, me asured value is displayed.<br>(Locking code is deactivated if all values are set on 0 – otherwise the d evice automatically closes after 2 minutes or in absence of the input power. Whe n UNLOCK? is displayed enter the right code to unlock.) |
| **Menu 14**<br>VERSION | **Displays the current firmware version.** |

## MAINTENANCE AND REPAIR

The device does not require regular maintenance. 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.

## STORAGE CONDITIONS

Storage temperature: –10…+70 °C (+14…+158 °F)

ddr622en20h01
April 2020


## Customer Support

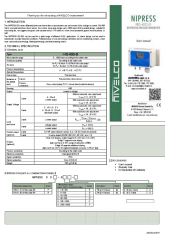
**Dodávateľ:**
MICROWELL spol. s r. o.
SNP 2018/42, 927 00 Šaľa
**Tel.:** (+421) 31/ 770 7585, 770 7082
**E-mail:** microwell@microwell.sk
www.microwell.sk

**Manufacturer**

NIVELCO Process Control Co.
H-1043 Budapasr, Dugonics u. 11.

**Phone:** +36 1 889-0100
**E-mail:** sales@nivelco.com | www.nivelco.com

## Documents / Resources

| | |
|---|---|
|  | NIVELCO NIPRESS DD-600 Differential Pressure Transmitter [pdf] User Manual<br>NIPRESS DD-600 Differential Pressure Transmitter, NIPRESS DD-600, Differential Pressure Transmitter, Pressure Transmitter, Transmitter |