



DNS3-201

## DNS/VNS

### Pressure switches and vacuum switches with stainless steel sensors (1.4571)

Pressure switches of the DNS series are suitable for monitoring and controlling pressures in chemical plants, process engineering and any situation where the pressure of aggressive liquids and gases must be monitored.

All components of the sensor system are made of high-quality stainless steel (1.4571) and welded using the latest methods without filler metals. The pressure sensor is gasket-free plasma-welded.

SIL 2 according IEC 61508-2



#### Technical data

##### Pressure connection

External thread G 1/2 (pressure gauge connection) according to DIN 16 288 and internal thread G 1/4 according to ISO 228 Part 1.

##### Switching device

Robust housing (200) made of seawater-resistant diecast aluminium GD Al Si 12.

##### Protection class

IP 54, in vertical position.

##### Pressure sensor materials

Pressure bellows and all parts in contact with medium. X 6 Cr Ni Mo Ti 17122 Material no. 1.4571

##### Mounting position

Vertically upright and horizontal.

##### Max. ambient temperature at switching device

-25...+70 °C.

##### Max. medium temperature

The maximum medium temperature at the pressure sensor must not exceed the permitted ambient temperature at the switching device. Temperatures may reach 85°C for short periods.

Higher medium temperatures are possible provided the above limit values for the switching device are ensured by suitable measures (e.g. siphon).

##### Mounting

Directly on the pressure line (pressure gaugeconnection) or on a flat surface with two 4 mm Ø screws.

##### Switching pressure

Adjustable from outside with screwdriver.

##### Switching differential

For values see Product Summary.

##### Contact arrangement

Single-pole changeover switch.

| Switching capacity | 250 VAC |       | 250 VDC | 24 VDC |
|--------------------|---------|-------|---------|--------|
|                    | (ohm)   | (ind) | (ohm)   | (ohm)  |
| Normal             | 8 A     | 5 A   | 0.3 A   | 8 A    |

##### Plastic coating

The diecast aluminium housing in GD Al Si is chromated and stove-enamelled with resistant plastic. Corrosion tests with 3% saline solution and 30 temperature changes from +10 to +80°C showed no surface changes after 20 days.

#### Product Summary

| Type | Setting range | Switching differential (mean values) | Max. permissible pressure | Dimensioned drawing |
|------|---------------|--------------------------------------|---------------------------|---------------------|
|------|---------------|--------------------------------------|---------------------------|---------------------|

##### Switching differential not adjustable

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|            |                  |          |        |        |
|------------|------------------|----------|--------|--------|
| VNS301-201 | -250...+100 mbar | 45 mbar  | 3 bar  |        |
| VNS111-201 | -1*...+0.1 bar   | 50 mbar  | 6 bar  |        |
| DNS025-201 | 0.04...0.25 bar  | 30 mbar  | 6 bar  | 1 + 15 |
| DNS06-201  | 0.1...0.6 bar    | 40 mbar  | 6 bar  |        |
| DNS1-201   | 0.2...1.6 bar    | 60 mbar  | 6 bar  |        |
| DNS3-201   | 0.2...2.5 bar    | 0.1 bar  | 16 bar |        |
| DNS6-201   | 0.5...6 bar      | 0.15 bar | 16 bar | 1 + 18 |
| DNS10-201  | 1...10 bar       | 0.3 bar  | 16 bar |        |
| DNS16-201  | 3...16 bar       | 0.5 bar  | 25 bar | 1 + 16 |

##### Switching differential adjustable

|            |                  |               |        |        |
|------------|------------------|---------------|--------|--------|
| VNS301-203 | -250...+100 mbar | 70 -300 mbar  | 3 bar  |        |
| VNS111-203 | -1*...+0.1 bar   | 90 -550 mbar  | 6 bar  |        |
| DNS025-203 | 0.04...0.25 bar  | 60 -300 mbar  | 6 bar  | 1 + 15 |
| DNS06-203  | 0.1...0.6 bar    | 80 -400 mbar  | 6 bar  |        |
| DNS1-203   | 0.2...1.6 bar    | 100 -600 mbar | 6 bar  |        |
| DNS3-203   | 0.2...2.5 bar    | 0.15- 1.5 bar | 16 bar |        |
| DNS6-203   | 0.5...6 bar      | 0.25- 2.0 bar | 16 bar | 1 + 18 |
| DNS10-203  | 1...10 bar       | 0.45- 2.5 bar | 16 bar |        |
| DNS16-203  | 3...16 bar       | 0.8- 3.5 bar  | 25 bar | 1 + 16 |

\* At very high vacuums, close to the theoretical maximum of -1 bar, the switch may not be usable in view of the special conditions of vacuum engineering. However, the pressure switch itself will not be damaged at maximum vacuum.

#### Calibration

The DNS and VNS series are calibrated for falling pressure. This means that the adjustable switching pressure on the scale corresponds to the switching point at falling pressure. The reset point is higher by the amount of the switching differential. (See also page 27, 1. Calibration at lower switching point).

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DNS6-351

## DNS/VNS

### Pressure and vacuum switches with stainless steel sensors (1.4571)

#### Chemical version (switching housing with surface protection)

Pressure switches of the DNS series are suitable for monitoring and controlling pressures in chemical plants, process engineering and any situation where the pressure of aggressive

liquids and gases must be monitored. All components of the sensor system are made from high-quality stainless steel (1.4571) and welded using the latest methods without filler metals. The pressure sensor is gasket free plasma welded.



SIL 2 according IEC 61508-2

#### Technical data

|   |  |
|---|--|
| <b>Pressure connection</b>                          | External thread G 1/2" (pressure gauge connection) according to DIN 16 288 and internal thread G 1/4" according to ISO 228 Part 1  |
| <b>Switching device</b>                             | Robust housing (300) made of seawater-resistant diecast aluminium GD Al Si 12  |
| <b>Protection class</b>                             | IP 65, in vertical position  |
| <b>Pressure sensor materials</b>                    | Pressure bellows and all parts in contact with medium X 6 Cr Ni Mo Ti 17122 Material no. 1.4571  |
| <b>Mounting position</b>                            | Vertically upright and horizontal  |
| <b>Max. ambient temperature at switching device</b> | -25 to +70 °C  |
| <b>Max. medium temperature</b>                      | The maximum medium temperature at the pressure sensor must not exceed the permitted ambient temperature at the switching device. Temperatures may reach 85 °C for short periods. Higher medium temperatures are possible provided the upper limit at the switching device is ensured by suitable measures (e.g. siphon). |
| <b>Plastic coating</b>                              | The diecast aluminium housing in GD Al Si is chromated and stove-enamelled with resistant plastic. Corrosion tests with 3% saline solution and 30 temperature changes from +10 to +80°C showed no surface changes after 20 days  |
| <b>Contact arrangement</b>                          | Single-pole changeover switch  |

| Switching capacity | 250 VAC (ohm) | 250 VDC (ohm) | 24 VDC (ohm) |
|--------------------|---------------|---------------|--------------|
| Normal             | 8 A           | 5 A           | 0.3 A        |

| Type                             | Setting range    | Switching differential (mean value) | Max. permissible pressure | Dimensioned drawing |
|----------------------------------|------------------|-------------------------------------|---------------------------|---------------------|
| <b>Hysteresis not adjustable</b> |                  |                                     |                           | <b>page 25+26</b>   |
| <b>VNS301-351</b>                | -250...+100 mbar | 45 mbar                             | 3 bar                     |                     |
| <b>VNS111-351</b>                | -1*...+0,1 bar   | 50 mbar                             | 6 bar                     |                     |
| <b>DNS025-351</b>                | 0,04...0,25 bar  | 30 mbar                             | 6 bar                     | 2 + 15              |
| <b>DNS06-351</b>                 | 0,1...0,6 bar    | 40 mbar                             | 6 bar                     |                     |
| <b>DNS1-351</b>                  | 0,2...1,6 bar    | 60 mbar                             | 6 bar                     |                     |
| <b>DNS3-351</b>                  | 0,2...2,5 bar    | 0,1 bar                             | 16 bar                    | 2 + 18              |
| <b>DNS6-351</b>                  | 0,5...6 bar      | 0,15 bar                            | 16 bar                    |                     |
| <b>DNS10-351</b>                 | 1...10 bar       | 0,3 bar                             | 16 bar                    | 2 + 16              |
| <b>DNS16-351</b>                 | 3...16 bar       | 0,5 bar                             | 25 bar                    |                     |

\* At very high vacuums, close to the theoretical maximum of -1 bar, the switch may not be usable in view of the special conditions of vacuum engineering. However, the pressure switch itself will not be damaged at maximum vacuum.

#### Calibration

The **DNS** and **VNS** series are calibrated for falling pressure. This means that the adjustable switching pressure on the scale corresponds to the switching point at falling pressure. The reset point is higher by the amount of the switching differential. (See also page 27, 1. Calibration at lower switching point).

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