



# DPS 300

## Multi Range Differential Pressure Transmitter for Gas and Compressed Air

Silicon Sensor

accuracy according to IEC 60770:  
0.5% FSO BFSL

### Differential pressure

from 0 ... 1.6 mbar up to 0 ... 1000 mbar

### Output signals

3-wire: 0 ... 10 V, 0 ... 20 mA  
(0 ... 5 V, 4 ... 20 mA switchable)  
2-wire: 4 ... 20 mA (optional)

### Special characteristics

- ▶ adjustable ranges
- ▶ high overpressure capability
- ▶ adjustable damping
- ▶ compact form

### Optional versions

- ▶ LC-display, two-line
- ▶ automatic zero adjustment
- ▶ contacts  
(only in combination with display)
- ▶ square root extraction  
(only in combination with display)

The pressure transmitter DPS 300 was developed for the differential pressure measuring for dry, non aggressive gases and compressed air and can be used for several HVAC applications

The DPS 300 is a multi range transmitter with up to three adjustable ranges.

The device is equipped with a two-line LC display optionally and can be parameterized simply. Values, status of the contact and the unit are shown on the display.

### Preferred applications are

 HVAC applications  
e.g. air conditioning, clean room  
technology, filter monitoring

 Medical

### Preferred areas of use are

 Gas, compressed air



# DPS 300

Differential Pressure Transmitter

Technical Data

| Input pressure range                                                        |                                                                                                                                                                                                                                                                                                                                             |                |                                                                                        |                                                         |                                                                                          |           |
|-----------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|----------------------------------------------------------------------------------------|---------------------------------------------------------|------------------------------------------------------------------------------------------|-----------|
| Nominal pressure P <sub>N</sub> [mbar]<br>(differential, gauge pressure)    | 1.6                                                                                                                                                                                                                                                                                                                                         | 4              | 10                                                                                     | 40                                                      | 250                                                                                      | 1000      |
| Adjustable to [mbar]                                                        | 1.0                                                                                                                                                                                                                                                                                                                                         | 2.5            | 6                                                                                      | 25                                                      | 60 / 160                                                                                 | 400 / 600 |
| Nominal pressure P <sub>N</sub> symmetric<br>(differential pressure) [mbar] | ±1.6                                                                                                                                                                                                                                                                                                                                        | ±4             | ±10                                                                                    | ±40                                                     | ±250                                                                                     | ±1000     |
| Max. static pressure [mbar]                                                 | 200                                                                                                                                                                                                                                                                                                                                         | 200            | 200                                                                                    | 345                                                     | 1000                                                                                     | 3000      |
| Output signal / Supply                                                      |                                                                                                                                                                                                                                                                                                                                             |                |                                                                                        |                                                         |                                                                                          |           |
| Standard                                                                    | 3-wire:                                                                                                                                                                                                                                                                                                                                     | switchable on: | 0 ... 10 V / 0 ... 20 mA<br>0 ... 5 V / 4 ... 20 mA<br>with automatic zero adjustment: |                                                         | V <sub>S</sub> = 19 ... 32 V <sub>DC</sub><br>V <sub>S</sub> = 24 ... 32 V <sub>DC</sub> |           |
| Option                                                                      | 2-wire:                                                                                                                                                                                                                                                                                                                                     |                | 4 ... 20 mA<br>with automatic zero adjustment:                                         |                                                         | V <sub>S</sub> = 11 ... 32 V <sub>DC</sub><br>V <sub>S</sub> = 24 ... 32 V <sub>DC</sub> |           |
| Performance                                                                 |                                                                                                                                                                                                                                                                                                                                             |                |                                                                                        |                                                         |                                                                                          |           |
| Accuracy                                                                    | for P <sub>N</sub> ≥ 6 mbar: ≤ ± 0.5% FSO BFSL                                                                                                                                                                                                                                                                                              |                | for P <sub>N</sub> < 6 mbar: ≤ ± 1% FSO BFSL                                           |                                                         |                                                                                          |           |
| Permissible load                                                            | voltage 3-wire: R <sub>min</sub> = 10 kΩ<br>current 2-wire: R <sub>max</sub> = [(V <sub>S</sub> – V <sub>S min</sub> ) / 0,02 A] Ω                                                                                                                                                                                                          |                | current 3-wire: 330 Ω                                                                  |                                                         |                                                                                          |           |
| Influence effects                                                           | supply: 0.05 % FSO / 10 V                                                                                                                                                                                                                                                                                                                   |                | load: 0.05 % FSO / kΩ                                                                  |                                                         |                                                                                          |           |
| Response time T <sub>90</sub>                                               | < 100 msec; adjustable by potentiometer in the range of 0 msec up to 5000 msec                                                                                                                                                                                                                                                              |                |                                                                                        |                                                         |                                                                                          |           |
| Turn on time                                                                | 500 msec                                                                                                                                                                                                                                                                                                                                    |                |                                                                                        |                                                         |                                                                                          |           |
| Long term stability                                                         | ≤ ± 0.5% FSO / year at reference conditions, for P <sub>N</sub> < 6 mbar<br>≤ ± 0.2% FSO / year at reference conditions, for P <sub>N</sub> ≥ 6 mbar                                                                                                                                                                                        |                |                                                                                        |                                                         |                                                                                          |           |
| Measuring rate                                                              | 12.5 Hz                                                                                                                                                                                                                                                                                                                                     |                |                                                                                        |                                                         |                                                                                          |           |
| Contact (optional)                                                          |                                                                                                                                                                                                                                                                                                                                             |                |                                                                                        |                                                         |                                                                                          |           |
|                                                                             | 3-wire version                                                                                                                                                                                                                                                                                                                              |                |                                                                                        | 2-wire version                                          |                                                                                          |           |
| Number, form                                                                | 2 x relay-output (NO/NC)                                                                                                                                                                                                                                                                                                                    |                |                                                                                        | 2 x PNP-open-collector-contact                          |                                                                                          |           |
| switching current<br>switching voltage<br>switching capacity                | max. 1 A<br>max. 60 V <sub>DC</sub> ; max. 40 V <sub>AC</sub><br>max. 60 W                                                                                                                                                                                                                                                                  |                |                                                                                        | max. 125 mA resistant; short-circuit-proof              |                                                                                          |           |
| Accuracy of switching points                                                | ≤ ± 2 % FSO                                                                                                                                                                                                                                                                                                                                 |                |                                                                                        | ≤ ± 2 % FSO                                             |                                                                                          |           |
| Accuracy of repeatability                                                   | ≤ ± 0.5 % FSO                                                                                                                                                                                                                                                                                                                               |                |                                                                                        | ≤ ± 0.5 % FSO                                           |                                                                                          |           |
| Switching frequency                                                         | 5 Hz                                                                                                                                                                                                                                                                                                                                        |                |                                                                                        | 5 Hz                                                    |                                                                                          |           |
| Switching cycles                                                            | < 100 x 10 <sup>6</sup>                                                                                                                                                                                                                                                                                                                     |                |                                                                                        | < 100 x 10 <sup>6</sup>                                 |                                                                                          |           |
| Thermal effects / Permissible temperatures                                  |                                                                                                                                                                                                                                                                                                                                             |                |                                                                                        |                                                         |                                                                                          |           |
| Thermal error (offset and span)                                             | ≤ ± 0.5 % FSO / 10 K (typ.) for P <sub>N</sub> < 6 mbar                                                                                                                                                                                                                                                                                     |                |                                                                                        | ≤ ± 0.3 % FSO / 10 K (typ.) for P <sub>N</sub> ≥ 6 mbar |                                                                                          |           |
| in compensated range                                                        | 0 ... 50 °C                                                                                                                                                                                                                                                                                                                                 |                |                                                                                        |                                                         |                                                                                          |           |
| Permissible temperatures                                                    | medium: 0 ... 50°C                                                                                                                                                                                                                                                                                                                          |                | electronics / environment: 0 ... 50°C                                                  |                                                         | storage: -10 ... 70°C                                                                    |           |
| Electrical protection                                                       |                                                                                                                                                                                                                                                                                                                                             |                |                                                                                        |                                                         |                                                                                          |           |
| Short-circuit protection                                                    | permanent                                                                                                                                                                                                                                                                                                                                   |                |                                                                                        |                                                         |                                                                                          |           |
| Reverse polarity protection                                                 | no damage, but also no function                                                                                                                                                                                                                                                                                                             |                |                                                                                        |                                                         |                                                                                          |           |
| Electromagnetic protection                                                  | EMC directive: 2014/30/EU                                                                                                                                                                                                                                                                                                                   |                |                                                                                        | emission and immunity according to EN 61326             |                                                                                          |           |
| Materials                                                                   |                                                                                                                                                                                                                                                                                                                                             |                |                                                                                        |                                                         |                                                                                          |           |
| Pressure port                                                               | brass nickel plated                                                                                                                                                                                                                                                                                                                         |                |                                                                                        |                                                         |                                                                                          |           |
| Housing                                                                     | ABS                                                                                                                                                                                                                                                                                                                                         |                |                                                                                        |                                                         |                                                                                          |           |
| Sensor                                                                      | ceramic, silicon, epoxy, RTV                                                                                                                                                                                                                                                                                                                |                |                                                                                        |                                                         |                                                                                          |           |
| Media wetted parts                                                          | pressure port, PVC / silicone tube, sensor                                                                                                                                                                                                                                                                                                  |                |                                                                                        |                                                         |                                                                                          |           |
| Display (optional)                                                          |                                                                                                                                                                                                                                                                                                                                             |                |                                                                                        |                                                         |                                                                                          |           |
| Performance                                                                 | two-line LC-Display, visible range 32.5 x 22.5 mm; 5-digit 7-segment-main display, digit size 8 mm, range of indication: ±9999; 8-digit 14-segment-additional display, digit size 5 mm; 52-segment-bargraph; accuracy: 0.1% ±1 digit                                                                                                        |                |                                                                                        |                                                         |                                                                                          |           |
| Functions                                                                   | <ul style="list-style-type: none"><li>- parameterisation of contacts</li><li>- selection of units</li><li>- selection of signal (linear, square root extraction)</li><li>- cut-off-function (only with square root extraction)</li><li>- min- / max-value</li><li>- recalibration</li><li>- autozeroing</li><li>- factory setting</li></ul> |                |                                                                                        |                                                         |                                                                                          |           |

| Miscellaneous                                                                                                                                                                         |                                                                                    |        |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|--------|
| Current consumption                                                                                                                                                                   | 2-wire: max. 22 mA<br>(during automatic zero adjustment: +23 mA)3-wire: max. 30 mA |        |
| Weight                                                                                                                                                                                | approx. 200 g                                                                      |        |
| Ingress protection                                                                                                                                                                    | IP 54                                                                              |        |
| Installation position                                                                                                                                                                 | vertical <sup>1</sup>                                                              |        |
| Operational life                                                                                                                                                                      | 100 million load cycles                                                            |        |
| <sup>1</sup> The devices are calibrated in a vertical position with pressure port down. If this position is changed on installation there can be slight deviations in the zero point. |                                                                                    |        |
| Mechanical connections (dimensions in mm)                                                                                                                                             |                                                                                    |        |
| Standard                                                                                                                                                                              | Ø 6.6 x 11 (for flex. tubes Ø 6)                                                   |        |
| Option                                                                                                                                                                                | Ø 4.4 x 10 (for flex. tubes Ø 4)                                                   |        |
| Electrical connections (conductor cross-section)                                                                                                                                      |                                                                                    |        |
| Without ferrule                                                                                                                                                                       | 1.5 mm <sup>2</sup>                                                                |        |
| With ferrule                                                                                                                                                                          | 1 mm <sup>2</sup>                                                                  |        |
| Pin configuration                                                                                                                                                                     |                                                                                    |        |
| Standard                                                                                                                                                                              | cable gland M16x1.5                                                                |        |
| Electrical connections                                                                                                                                                                | 3-wire                                                                             | 2-wire |
| supply +                                                                                                                                                                              | VS +                                                                               | VS +   |
| supply –                                                                                                                                                                              | VS -                                                                               | VS -   |
| signal + (only for 3-wire)                                                                                                                                                            | Iout / Vout                                                                        | -      |
| contact 1                                                                                                                                                                             | C1 / NO1 / NC1                                                                     | S1     |
| contact 2                                                                                                                                                                             | C2 / NO2 / NC2                                                                     | S2     |
| Wiring diagram                                                                                                                                                                        |                                                                                    |        |
| 3-wire-system (current / voltage)                                                                                                                                                     |                                                                                    |        |
|                                                                                                                                                                                       |                                                                                    |        |
| 3-wire-system (current / voltage) with 2 contacts                                                                                                                                     |                                                                                    |        |
|                                                                                                                                                                                       |                                                                                    |        |
| 2-wire-system (current)                                                                                                                                                               |                                                                                    |        |
|                                                                                                                                                                                       |                                                                                    |        |
| 2-wire-system (current) with 2 contacts                                                                                                                                               |                                                                                    |        |
|                                                                                                                                                                                       |                                                                                    |        |
| Dimension (in mm)                                                                                                                                                                     |                                                                                    |        |
| standard                                                                                                                                                                              |                                                                                    |        |
|                                                                                                                                                                                       |                                                                                    |        |
| DPS 300 without display                                                                                                                                                               |                                                                                    |        |
| option                                                                                                                                                                                |                                                                                    |        |
|                                                                                                                                                                                       |                                                                                    |        |
| DPS 300 with display                                                                                                                                                                  |                                                                                    |        |

Ordering code DPS 300

## DPS 300

|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| □ | □ | □ | - | □ | □ | □ | - | □ | - | □ | - | □ | - | □ | □ | □ | - | □ | - | □ | □ | □ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

[illegible]<sup>1</sup> output switchable on 0 ... 5 V / 4 ... 20 mA

<sup>2</sup> only in combination with display