

# DCT 533P



## Industrial Pressure Transmitter with IO-Link Interface

Process Connections with Flush Welded  
Stainless Steel Diaphragm

accuracy according to IEC 60770:  
standard:  $\leq \pm 0.25\%$  FSO  
option:  $\leq \pm 0.1\%$  FSO

### Nominal pressure

from 0 ... 100 mbar up to 0 ... 40 bar

### Output signal

- IO-Link according to specification V 1.1
- data transfer rate 38.4 kbit/sec
- smart sensor profile

### Special characteristics

- ▶ hygienic version
- ▶ diaphragm with low surface roughness
- ▶ CIP / SIP-cleaning up to 150 °C
- ▶ ingress protection IP 67 / IP 69

### Optional versions

- ▶ different process connections
- ▶ cooling element for media temperatures up to 250 °C

The DCT 533P is suitable for food / beverage and pharmaceutical industry as well as, for applications where a totally flush pressure port is required. The special design prevents condensation inside the pressure transmitter and thus a failure in applications with large temperature changes.

The integrated, standardised IO-Link interface increases productivity and supports the operator in service and maintenance. Properties can be read and qualified via IO-Link, which helps the user to assess the state of system or process.

### Preferred areas of use are



Food and beverage



Pharmaceutical industry

### Material and test certificates

- ▶ inspection certificate 3.1 according to EN 10204
- ▶ test report 2.2 according to EN 10204



| Input pressure range <sup>1</sup>  |         |   |      |      |   |          |      |  |            |     |                                     |    |  |
|--|---------|---|------|------|---|----------|------|--|------------|-----|-------------------------------------|----|--|
| Nominal pressure gauge   | [bar]   | -1...0  | 0.10 | 0.16 | 0.25  | 0.40     | 0.60 | 1  | 1.6        | 2.5 | 4                                   | 6  |  |
| Nominal pressure absolute  | [bar]   | -   | -    | -    | -   | 0.40     | 0.60 | 1  | 1.6        | 2.5 | 4                                   | 6  |  |
| Overpressure   | [bar]   | 5   | 0.5  | 1    | 1   | 2        | 5    | 5  | 10         | 10  | 20                                  | 40 |  |
| Burst pressure ≥   | [bar]   | 7.5   | 1.5  | 1.5  | 1.5   | 3        | 7.5  | 7.5  | 15         | 15  | 25                                  | 50 |  |
| Nominal pressure gauge / abs.  | [bar]   | 10  |      |      | 16  |          |      | 25   |            |     | 40                                  |    |  |
| Overpressure   | [bar]   | 40  |      |      | 80  |          |      | 80   |            |     | 105                                 |    |  |
| Burst pressure ≥   | [bar]   | 50  |      |      | 120   |          |      | 120  |            |     | 210                                 |    |  |
| Vacuum resistance  |         | p <sub>N</sub> > 1 bar: unlimited vacuum resistance   |      |      |   |          |      | p <sub>N</sub> ≤ 1 bar: on request         |            |     |                                     |    |  |
| <sup>1</sup> consider the pressure resistance of fitting and clamps  |         |   |      |      |   |          |      |  |            |     |                                     |    |  |
| Output signal / Supply   |         |   |      |      |   |          |      |  |            |     |                                     |    |  |
| Standard   |         | IO-Link (measured value transmission)<br>SIO (switching output)   |      |      |   |          |      | V <sub>S</sub> = 18 ... 30 V <sub>DC</sub> |            |     |                                     |    |  |
| IO-Link  |         | V 1.1 / slave / smart sensor profile  |      |      |   |          |      |  |            |     |                                     |    |  |
| Data transfer  |         | COM 2 38.4 kbit/sec   |      |      |   |          |      |  |            |     |                                     |    |  |
| Mode   |         | SIO / IO-Link   |      |      |   |          |      |  |            |     |                                     |    |  |
| Standard   |         | IEC 61131-9   |      |      |   |          |      |  |            |     |                                     |    |  |
| Performance  |         |   |      |      |   |          |      |  |            |     |                                     |    |  |
| Accuracy <sup>2</sup>  |         | standard: ≤ ± 0.25 % FSO<br>option: ≤ ± 0.1 % FSO   |      |      |   |          |      |  |            |     |                                     |    |  |
| Switching current (SIO-Mode)   |         | max. 200 mA   |      |      |   |          |      |  |            |     |                                     |    |  |
| Switching frequency  |         | max. 200 Hz   |      |      |   |          |      |  |            |     |                                     |    |  |
| Switching cycles   |         | > 100 x 10 <sup>6</sup>   |      |      |   |          |      |  |            |     |                                     |    |  |
| Long term stability  |         | ≤ ± 0.1 % FSO / year at reference conditions  |      |      |   |          |      |  |            |     |                                     |    |  |
| Turn-on time   |         | SIO mode: approx. 20 msec   |      |      |   |          |      |  |            |     |                                     |    |  |
| Response time  |         | SIO mode: < 4 msec  |      |      |   |          |      |  |            |     |                                     |    |  |
| Measuring rate   |         | 400 Hz  |      |      |   |          |      |  |            |     |                                     |    |  |
| <sup>2</sup> accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)                                     |         |   |      |      |   |          |      |  |            |     |                                     |    |  |
| Thermal effects (offset and span) <sup>3</sup>   |         |   |      |      |   |          |      |  |            |     |                                     |    |  |
| Nominal pressure p <sub>N</sub>  | [bar]   | -1 ... 0  |      |      |   | < 0.40   |      |  | ≥ 0.40     |     |                                     |    |  |
| Tolerance band   | [% FSO] | ≤ ± 0.75  |      |      |   | ≤ ± 1.5  |      |  | ≤ ± 0.75   |     |                                     |    |  |
| In compensated range <sup>4</sup>  | [°C]    | -20 ... 85  |      |      |   | 0 ... 50 |      |  | -20 ... 85 |     |                                     |    |  |
| <sup>3</sup> an optional cooling element can influence thermal effects for offset and span depending on installation position and filling conditions |         |   |      |      |   |          |      |  |            |     |                                     |    |  |
| <sup>4</sup> the minimum compensation temperature depends on the filling fluid used  |         |   |      |      |   |          |      |  |            |     |                                     |    |  |
| Permissible temperatures   |         |   |      |      |   |          |      |  |            |     |                                     |    |  |
| Filling fluid  |         | silicone oil  |      |      |   |          |      | food compatible oil                        |            |     |                                     |    |  |
| Medium <sup>5</sup>  |         | -40 ... 125 °C  |      |      |   |          |      | -10 ... 125 °C                             |            |     |                                     |    |  |
| Medium with cooling element 250 °C   |         | overpressure: -40 ... 250 °C  |      |      | vacuum: -40 ... 150 °C <sup>6</sup>                         |          |      | overpressure: -10 ... 250 °C               |            |     | vacuum: -10 ... 150 °C <sup>6</sup> |    |  |
| Electronics / environment  |         | -40 ... 85 °C   |      |      |   |          |      |  |            |     |                                     |    |  |
| Storage  |         | -40 ... 100 °C  |      |      |   |          |      |  |            |     |                                     |    |  |
| <sup>5</sup> max. temperature of the medium for nominal pressure gauge > 0 bar: 150 °C for 60 minutes with a max. environmental temperature of 50 °C |         |   |      |      |   |          |      |  |            |     |                                     |    |  |
| <sup>6</sup> also for p <sub>abs</sub> ≤ 1 bar   |         |   |      |      |   |          |      |  |            |     |                                     |    |  |
| Electrical protection  |         |   |      |      |   |          |      |  |            |     |                                     |    |  |
| Short-circuit protection   |         | permanent   |      |      |   |          |      |  |            |     |                                     |    |  |
| Reverse polarity protection  |         | on supply connection no damage, but also no function  |      |      |   |          |      |  |            |     |                                     |    |  |
| Electromagnetic compatibility  |         | emission and immunity according to EN 61326   |      |      |   |          |      |  |            |     |                                     |    |  |
| Mechanical stability   |         |   |      |      |   |          |      |  |            |     |                                     |    |  |
| Vibration  |         | acc. to DIN EN 60068-2-6  |      |      | G 1/2": 20 g RMS (25...2000 Hz)                             |          |      | others: 10 g RMS (25...2000 Hz)            |            |     |                                     |    |  |
| Shock  |         | acc. to DIN EN 60068-2-27   |      |      | G 1/2": 500 g / 1 msec                                      |          |      | others: 100 g / 1 msec                     |            |     |                                     |    |  |
| Filling fluids   |         |   |      |      |   |          |      |  |            |     |                                     |    |  |
| Standard   |         | silicone oil  |      |      |   |          |      |  |            |     |                                     |    |  |
| Option   |         | food compatible oil according to 21CFR178.3570<br>(Mobil SHC Cibus 32; Category Code: H1; NSF Registration No.: 141500) others on request |      |      |   |          |      |  |            |     |                                     |    |  |
| Materials  |         |   |      |      |   |          |      |  |            |     |                                     |    |  |
| Housing / electrical connection  |         | stainless steel 1.4404 (316 L)  |      |      |   |          |      |  |            |     |                                     |    |  |
| Pressure port  |         | stainless steel 1.4435 (316 L), R <sub>a</sub> < 0.8 μm (media wetted parts and weld seam)  |      |      |   |          |      |  |            |     |                                     |    |  |
| Diaphragm  |         | stainless steel 1.4435 (316 L), R <sub>a</sub> < 0.15 μm  |      |      |   |          |      |  |            |     |                                     |    |  |
| Seals  |         | standard: FKM (recommended for medium temperatures ≤ 200 °C)  |      |      | option: FFKM (recommended for medium temperatures > 200 °C) |          |      | others on request                          |            |     |                                     |    |  |
|  |         | Clamp, dairy pipe, Varivent®: without   |      |      |   |          |      |  |            |     |                                     |    |  |
| Media wetted parts   |         | pressure port, seal, diaphragm  |      |      |   |          |      |  |            |     |                                     |    |  |

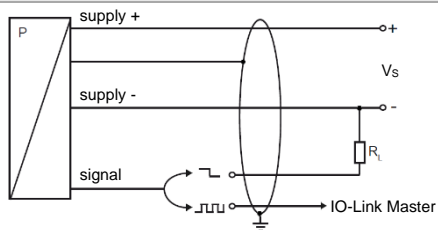
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Industrial Pressure Transmitter with IO-Link Interface

Technical Data

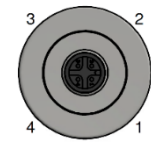
| Miscellaneous         |  |
|-----------------------|--|
| Weight                | approx. 200 g  |
| Current consumption   | max. 15 mA   |
| Operational life      | 100 million load cycles  |
| Installation position | any (standard calibration in a vertical position with the pressure port connection down; differing installation position for $p_N \leq 2$ bar have to be specified in the order) |
| CE-conformity         | EMC Directive: 2014/30/EU  |

### Wiring diagram

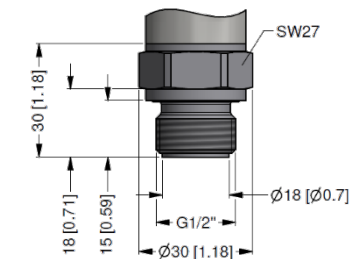
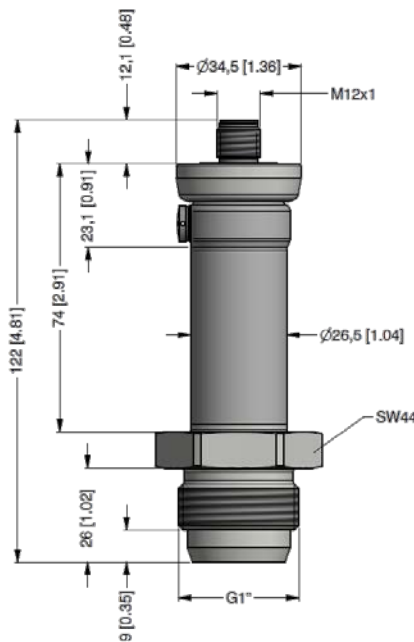


### Pin configuration / electrical connection

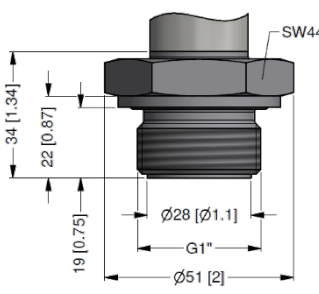
| Electrical connection | M12x1 / metal (4-pin) |
|-----------------------|-----------------------|
| Supply +              | 1                     |
| Supply -              | 3                     |
| SIO / IO Link         | 4                     |
| Shield                | plug housing          |



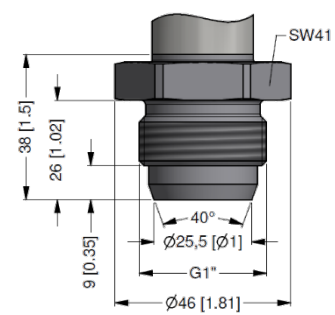
### Dimensions / mechanical connection (mm / in)



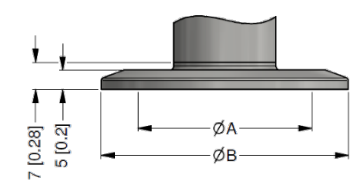
G1/2" DIN 3852 flush,  $p_N \geq 1$  bar



G1" DIN 3852 flush



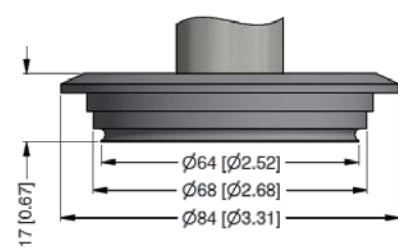
G1" cone



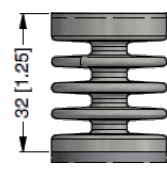
Clamp (DIN 32676)

| size        | dimensions in mm |           |
|-------------|------------------|-----------|
|             | DN 25            | DN 32     |
| A           | 23               | 32        |
| B           | 50.5             | 50.5      |
| $p_N$ [bar] | $\leq 16$        | $\leq 16$ |

\* higher pressure ranges on request



Varivent® DN 40/50  $p_N \leq 25$  bar



cooling element up to 250 °C

⇒ metric threads and other versions on request

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