



# DCT 533P

## Industrial Pressure Transmitter with IO-Link Interface

Process Connections with Flush Welded Stainless Steel Diaphragm

accuracy according to IEC 60770:  
standard:  $\leq \pm 0.35\%$  FSO  
option:  $\leq \pm 0.25\%$  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 300 °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: for p <sub>N</sub> ≥ 0.4 bar: ≤ ± 0.35 % FSO / for p <sub>N</sub> < 0.4 bar: ≤ ± 0.50 % FSO<br>option for p <sub>N</sub> ≥ 0.4 bar: ≤ ± 0.25 % 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    |      |      | ≤ ± 0.75  |     |     |     |    |
| In compensated range <sup>4</sup>  | [°C]    | -20 ... 85   |      |      | 0 ... 70 |      |      | -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 <sup>6</sup>   |         | overpressure: -40 ... 300 °C<br>vacuum: -40 ... 150 °C <sup>7</sup>  |      |      |          |      |      | overpressure: -10 ... 250 °C<br>vacuum: -10 ... 150 °C <sup>7</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> max. temperature depends on the used sealing material and type of seal and installation   |         |  |      |      |          |      |      |   |     |     |     |    |
| <sup>7</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)<br>option: FFKM (recommended for medium temperatures < 260 °C) others on request<br>Clamp, Varivent®: without |      |      |          |      |      |   |     |     |     |    |
| Media wetted parts   |         | pressure port, seal, diaphragm   |      |      |          |      |      |   |     |     |     |    |

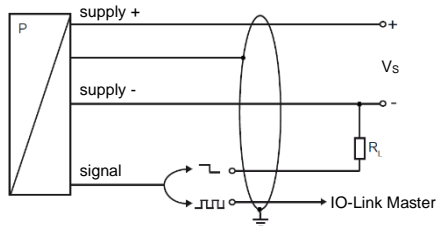
# DCT 533P

Industrial Pressure Transmitter with IO-Link Interface

Technical Data

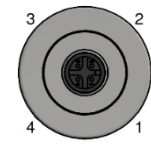
| Miscellaneous   |  |
|---|--|
| EHDG certificate<br>Type EL Class I<br>(in preparation) | EHDG conformity is only ensured in combination with an approved seal. This is e.g. for<br>- Clamp (C61, C62): T-ring-seal from Combifit International B.V.<br>- Varivent® (P41): EPDM-O-ring which is FDA-listed |
| 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;<br>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)

SW27  
G1/2" DIN 3852 flush,  $p_N \geq 1$  bar

SW44  
G1" DIN 3852 flush

SW41  
G1" cone

Clamp (DIN 32676)

| dimensions in mm |           |           |
|------------------|-----------|-----------|
| size             | 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 300 °C <sup>6</sup>

⇒ metric threads and other versions on request

<sup>6</sup> max. temperature depends on the used sealing material and type of seal and installation

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## Ordering code DCT 533P

DCT 533P

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| Pressure              |  |            | D | C | H |   |   |   |  |  |  |  |  |  |  |         |       |         |  |  |
|-----------------------|--|------------|---|---|---|---|---|---|--|--|--|--|--|--|--|---------|-------|---------|--|--|
|                       | gauge                                      | D          | C | H |   |   |   |   |  |  |  |  |  |  |  |         |       |         |  |  |
|                       | absolute                                   | D          | C | G |   |   |   |   |  |  |  |  |  |  |  |         |       |         |  |  |
| Input                 |  |            |   |   |   |   |   |   |  |  |  |  |  |  |  |         |       |         |  |  |
|                       | [bar]                                      |            |   |   |   |   |   |   |  |  |  |  |  |  |  |         |       |         |  |  |
|                       | 0.10                                       | 1          |   |   | 1 | 0 | 0 | 0 |  |  |  |  |  |  |  |         |       |         |  |  |
|                       | 0.16                                       | 1          |   |   | 1 | 6 | 0 | 0 |  |  |  |  |  |  |  |         |       |         |  |  |
|                       | 0.25                                       | 1          |   |   | 2 | 5 | 0 | 0 |  |  |  |  |  |  |  |         |       |         |  |  |
|                       | 0.40                                       |            |   |   | 4 | 0 | 0 | 0 |  |  |  |  |  |  |  |         |       |         |  |  |
|                       | 0.60                                       |            |   |   | 6 | 0 | 0 | 0 |  |  |  |  |  |  |  |         |       |         |  |  |
|                       | 1.0  |            |   |   | 1 | 0 | 0 | 1 |  |  |  |  |  |  |  |         |       |         |  |  |
|                       | 1.6  |            |   |   | 1 | 6 | 0 | 1 |  |  |  |  |  |  |  |         |       |         |  |  |
|                       | 2.5  |            |   |   | 2 | 5 | 0 | 1 |  |  |  |  |  |  |  |         |       |         |  |  |
|                       | 4.0  |            |   |   | 4 | 0 | 0 | 1 |  |  |  |  |  |  |  |         |       |         |  |  |
|                       | 6.0  |            |   |   | 6 | 0 | 0 | 1 |  |  |  |  |  |  |  |         |       |         |  |  |
|                       | 10   |            |   |   | 1 | 0 | 0 | 2 |  |  |  |  |  |  |  |         |       |         |  |  |
|                       | 16   |            |   |   | 1 | 6 | 0 | 2 |  |  |  |  |  |  |  |         |       |         |  |  |
|                       | 25   |            |   |   | 2 | 5 | 0 | 2 |  |  |  |  |  |  |  |         |       |         |  |  |
|                       | 40   |            |   |   | 4 | 0 | 0 | 2 |  |  |  |  |  |  |  |         |       |         |  |  |
|                       | -1 ... 0                                   |            |   |   | X | 1 | 0 | 2 |  |  |  |  |  |  |  |         |       |         |  |  |
|                       | customer                                   |            |   |   | 9 | 9 | 9 | 9 |  |  |  |  |  |  |  | consult |       |         |  |  |
| Output                |  |            |   |   |   |   |   |   |  |  |  |  |  |  |  |         |       |         |  |  |
|                       | IO-Link / SIO                              |            |   |   |   |   |   |   |  |  |  |  |  |  |  |         |       |         |  |  |
|                       |  |            |   |   | I | O |   |   |  |  |  |  |  |  |  |         |       |         |  |  |
| Accuracy              |  |            |   |   |   |   |   |   |  |  |  |  |  |  |  |         |       |         |  |  |
|                       | standard for $p_N \geq 0.4$ bar            | 0.35 % FSO |   |   |   |   |   |   |  |  |  |  |  |  |  |         |       | 3       |  |  |
|                       | standard for $p_N < 0.4$ bar               | 0.50 % FSO |   |   |   |   |   |   |  |  |  |  |  |  |  |         |       | 5       |  |  |
|                       | option for $p_N \geq 0.4$ bar              | 0.25 % FSO |   |   |   |   |   |   |  |  |  |  |  |  |  |         |       | 2       |  |  |
|                       | customer                                   |            |   |   |   |   |   |   |  |  |  |  |  |  |  |         |       | 9       |  |  |
|                       |  |            |   |   |   |   |   |   |  |  |  |  |  |  |  |         |       | consult |  |  |
|                       |  |            |   |   |   |   |   |   |  |  |  |  |  |  |  |         |       | consult |  |  |
| Electrical connection |  |            |   |   |   |   |   |   |  |  |  |  |  |  |  |         |       |         |  |  |
|                       | male plug M12x1 (4-pin) / metal            |            |   |   |   |   |   |   |  |  |  |  |  |  |  |         | M 1 7 |         |  |  |
|                       | customer                                   |            |   |   |   |   |   |   |  |  |  |  |  |  |  |         | 9 9 9 |         |  |  |
|                       |  |            |   |   |   |   |   |   |  |  |  |  |  |  |  |         |       | consult |  |  |
| Mechanical connection |  |            |   |   |   |   |   |   |  |  |  |  |  |  |  |         |       |         |  |  |
|                       | G1/2" DIN 3852 flush ( $p_N \geq 1$ bar)   |            |   |   |   |   |   |   |  |  |  |  |  |  |  |         | Z 0 0 |         |  |  |
|                       | G1" DIN 3852 flush                         |            |   |   |   |   |   |   |  |  |  |  |  |  |  |         | Z S 1 |         |  |  |
|                       | G 1" cone                                  |            |   |   |   |   |   |   |  |  |  |  |  |  |  |         | K S 1 |         |  |  |
|                       | Clamp DN 25 DIN 32676 ( $p_N \leq 16$ bar) |            |   |   |   |   |   |   |  |  |  |  |  |  |  |         | C 6 1 |         |  |  |
|                       | Clamp DN 32 DIN 32676 ( $p_N \leq 16$ bar) |            |   |   |   |   |   |   |  |  |  |  |  |  |  |         | C 6 2 |         |  |  |
|                       | Varivent® DN 40/50 ( $p_N \leq 25$ bar)    |            |   |   |   |   |   |   |  |  |  |  |  |  |  |         | P 4 1 |         |  |  |
|                       | customer                                   |            |   |   |   |   |   |   |  |  |  |  |  |  |  |         | 9 9 9 |         |  |  |
|                       |  |            |   |   |   |   |   |   |  |  |  |  |  |  |  |         |       | consult |  |  |
| Diaphragm             |  |            |   |   |   |   |   |   |  |  |  |  |  |  |  |         |       |         |  |  |
|                       | stainless steel 1.4435 (316L)              |            |   |   |   |   |   |   |  |  |  |  |  |  |  |         | 1     |         |  |  |
|                       | customer                                   |            |   |   |   |   |   |   |  |  |  |  |  |  |  |         | 9     |         |  |  |
|                       |  |            |   |   |   |   |   |   |  |  |  |  |  |  |  |         |       | consult |  |  |
| Seal                  |  |            |   |   |   |   |   |   |  |  |  |  |  |  |  |         |       |         |  |  |
|                       | for clamp, Varivent®:                      | without    |   |   |   |   |   |   |  |  |  |  |  |  |  |         |       | 0       |  |  |
|                       | for inch thread - standard:                | FKM        |   |   |   |   |   |   |  |  |  |  |  |  |  |         |       | 1       |  |  |
|                       | for inch thread - option:                  | FFKM       |   |   |   |   |   |   |  |  |  |  |  |  |  |         |       | 7       |  |  |
|                       | customer                                   |            |   |   |   |   |   |   |  |  |  |  |  |  |  |         |       | 9       |  |  |
|                       |  |            |   |   |   |   |   |   |  |  |  |  |  |  |  |         |       | consult |  |  |
| Filling fluid         |  |            |   |   |   |   |   |   |  |  |  |  |  |  |  |         |       |         |  |  |
|                       | silicone oil                               |            |   |   |   |   |   |   |  |  |  |  |  |  |  |         | 1     |         |  |  |
|                       | food compatible oil (FDA)                  |            |   |   |   |   |   |   |  |  |  |  |  |  |  |         | 2     |         |  |  |
|                       | customer                                   |            |   |   |   |   |   |   |  |  |  |  |  |  |  |         | 9     |         |  |  |
|                       |  |            |   |   |   |   |   |   |  |  |  |  |  |  |  |         |       | consult |  |  |
| Special version       |  |            |   |   |   |   |   |   |  |  |  |  |  |  |  |         |       |         |  |  |
|                       | standard                                   |            |   |   |   |   |   |   |  |  |  |  |  |  |  |         | 0 3 P |         |  |  |
|                       | with cooling element up to 300°C           |            |   |   |   |   |   |   |  |  |  |  |  |  |  |         | 2 3 P |         |  |  |
|                       | customer                                   |            |   |   |   |   |   |   |  |  |  |  |  |  |  |         | 9 9 9 |         |  |  |
|                       |  |            |   |   |   |   |   |   |  |  |  |  |  |  |  |         |       | consult |  |  |

<sup>1</sup> absolute pressure possible from 0.4 bar

Varivent® is a brand name of GEA Tuchenhagen GmbH

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