



DCT 533P

Industrial Pressure Transmitter with IO-Link Interface

Process Connections with Flush Welded
Stainless Steel Diaphragm

accuracy according to IEC 61298-2:
standard: $\leq \pm 0.35\% \text{ FSO}$
option: $\leq \pm 0.25\% \text{ FSO}$

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



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Technical Data

Input pressure range ¹												
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 $p_N > 1 \text{ bar}$: unlimited vacuum resistance $p_N \leq 1 \text{ bar}$: on request

¹ consider the pressure resistance of fitting and clamps

Output signal / Supply											
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Standard	IO-Link (measured value transmission) SIO (switching output)	$V_S = 18 \dots 30 \text{ V}_{\text{DC}}$
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											
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Accuracy ²	standard: for $p_N \geq 0.4 \text{ bar}$: $\leq \pm 0.35 \% \text{ FSO}$ / for $p_N < 0.4 \text{ bar}$: $\leq \pm 0.50 \% \text{ FSO}$ option for $p_N \geq 0.4 \text{ bar}$: $\leq \pm 0.25 \% \text{ FSO}$	
Switching current (SIO-Mode)	max. 200 mA	
Switching frequency	max. 200 Hz	
Switching cycles	$> 100 \times 10^6$	
Long term stability	$\leq \pm 0.1 \% \text{ FSO} / \text{year at reference conditions}$	
Turn-on time	SIO mode: approx. 20 msec	
Response time	SIO mode: < 4 msec	
Measuring rate	400 Hz	

² accuracy according to IEC 61298-2 – limit point adjustment (non-linearity, hysteresis, repeatability)

Thermal effects (offset and span) ³											
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Nominal pressure p_N	[bar]	-1 ... 0	< 0.40	≥ 0.40
Tolerance band	[% FSO]	$\leq \pm 0.75$	$\leq \pm 1$	$\leq \pm 0.75$
In compensated range ⁴	[°C]	-20 ... 85	0 ... 70	-20 ... 85

³ an optional cooling element can influence thermal effects for offset and span depending on installation position and filling conditions

⁴ the minimum compensation temperature depends on the filling fluid used

Permissible temperatures											
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Filling fluid	silicone oil	food compatible oil
Medium ⁵	-40 ... 125 °C	-10 ... 125 °C
Medium with cooling element ⁶	overpressure: -40 ... 300 °C vacuum: -40 ... 150 °C ⁷	overpressure: -10 ... 250 °C vacuum: -10 ... 150 °C ⁷
Electronics / environment	-40 ... 85 °C	
Storage	-40 ... 100 °C	

⁵ max. temperature of the medium for nominal pressure gauge $> 0 \text{ bar}$: 150 °C for 60 minutes with a max. environmental temperature of 50 °C

⁶ max. temperature depends on the used sealing material and type of seal and installation

⁷ also for $p_{abs} \leq 1 \text{ bar}$

Electrical protection											
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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											
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Vibration	20 g RMS / 10 ... 2000 Hz according to DIN EN 60068-2-6 10 g RMS / 10 ... 2000 Hz according to DIN EN 60068-2-6 (with cooling element)
Shock	500 g / 1 msec half sine according to DIN EN 60068-2-27

Filling fluids											
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Standard	silicone oil
Option	food compatible oil according to 21CFR178.3570 (Mobil SHC Cibus 32; Category Code: H1; NSF Registration No.: 141500) others on request

Materials											
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Housing / electrical connection	stainless steel 1.4404 (316 L)
Pressure port	stainless steel 1.4435 (316 L), $R_a < 0.8 \mu\text{m}$ (media wetted parts and weld seam)
Diaphragm	stainless steel 1.4435 (316 L), $R_a < 0.15 \mu\text{m}$
Seals	standard: FKM (recommended for medium temperatures $\leq 200 \text{ }^\circ\text{C}$) option: FFHKM (recommended for medium temperatures $< 260 \text{ }^\circ\text{C}$) others on request
Media wetted parts	pressure port, seal, diaphragm

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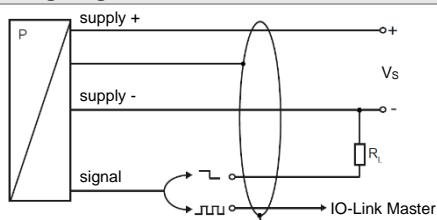
Industrial Pressure Transmitter with IO-Link Interface

Technical Data

Miscellaneous

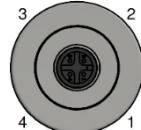
EHEDG certificate Type EL Class I (in preparation)	EHEDG conformity is only ensured in combination with an approved seal. This is e.g. for - Clamp (C61, C62): T-ring-seal from Combitfit International B.V. - Varivent® (P41): EPDM-O-ring which is FDA-listed
Weight	approx. 200 g
Current consumption	max. 15 mA
Operational life	100 million load cycles
Installation position	any (standard calibration in a vertical position with the pressure port connection down; 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

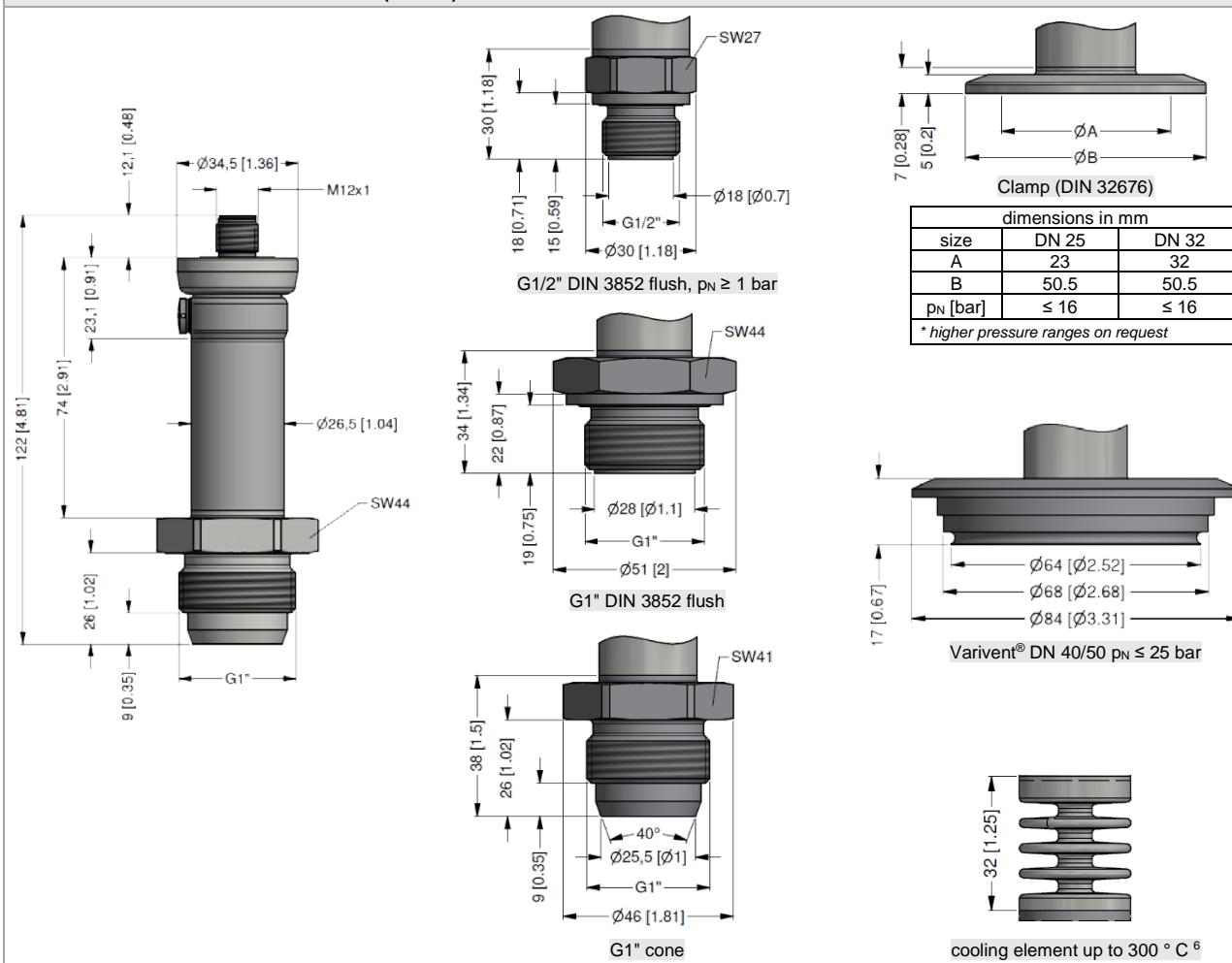


Pin configuration / electrical connection

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



Dimensions / mechanical connection (mm / in)



⇒ metric threads and other versions on request

⁶ max. temperature depends on the used sealing material and type of seal and installation

Ordering code DCT 533P

DCT 533P												
Pressure		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						consult
	customer					9						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							consult
customer			9	9	9							
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

¹ absolute pressure possible from 0.4 bar

Varivent® is a brand name of GEA Tuchenhausen GmbH

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