

# PRODUCT CATALOGUE

## PRESSURE TRANSMITTER DIGITAL



# PRESSURE AT THE HIGHEST LEVEL

**„Successful medium-sized companies are not successful because they are active in many areas, but rather because they concentrate on one area and do it better than anyone else“**

This is our philosophy. That's why BDESENSORS has concentrated on electronic pressure measurement technology from the beginning.

With our unrelenting product and quality strategy we have been successful in becoming a major player on the world market for electronic pressure sensing devices within a few years.

With 260 employees at 4 locations in Germany, the Czech Republic, Russia and China BD|SENSORS has solutions from 0.1 mbar to 6000 bar:

- > pressure sensors, pressure transducers  
pressure transmitters
- > electronic pressure switches
- > pressure measuring devices with display and  
switching outputs
- > hydrostatic level probes

Two pressure transmitters and a submersible probe, based on a stainless steel silicon sensor were the beginning. Today the range extends to more than 70 standard products, from economical OEM devices to high-end products with HART® communication or field bus interface.

In addition we have developed hundreds of customer-specific applications, underlining the competence and flexibility of BD|SENSORS. The excellent price/performance ratio of our products is proof of the fact that we are able to meet the toughest demand: Being a problem-solver for our customers.

For large production batches as well as for small production numbers, no matter for what medium or external factors, with almost any mechanical or electrical connection - we solve your problem

**flexibly, quickly and cost-efficiently.**

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**BD|SENSORS** [www.bdsensors.com](http://www.bdsensors.com)

## PRODUCT MATRIX „PRESSURE AND LEVEL MEASUREMENT DEVICES WITH DIGITAL INTERFACES“

PRODUCT DIGITAL		PRODUCT ANALOG	ACCURACY	NOMINAL PRESSURE	SENSOR				OUTPUT SIGNAL		
		equivalent product with analog output signal	% FSO	mbar / bar	piezoresistive stainless steel silicon sensor (with media isolation)	capacitive ceramic sensor (Ø 32,4 mm)	piezoresistive ceramic thickfilm sensor	capacitive ceramic sensor (Ø 19 mm)	IO-LINK	MODBUS RTU	i2C
 DRUCKMESSTECHNIK											
INDUSTRY	DCT 531	DMP 321	0,25	0 ... 100 mbar to 0 ... 400 bar	•					•	
	DCT 532	DMP 321	0,25	0 ... 100 mbar to 0 ... 400 bar	•						•
	DCT 533	DMP 321	0,25	0 ... 100 mbar to 0 ... 400 bar	•				•		
	DCT 531P	DMP 331P	0,25	0 ... 100 mbar to 0 ... 40 bar	•					•	
	DCT 533P	DMP 331P	0,25	0 ... 100 mbar to 0 ... 40 bar	•				•		
	DCT 553P	DMK 351P	0,25	0 ... 40 mbar to 0 ... 20 bar		•			•		
	DCT 561	DMK 331	0,50	0 ... 600 mbar to 0 ... 600 bar			•			•	
	DCT 562	DMK 331	0,50	0 ... 400 mbar to 0 ... 600 bar			•				•
	DCT 563	DMK 331	0,50	0 ... 600 mbar to 0 ... 600 bar			•		•		
	DCT 571	DMK 387	0,35	0 ... 100 mbar to 0 ... 60 bar				•		•	
PRECISION	DCT 531i	DMP 331i	0,10	0 ... 400 mbar to 0 ... 400 bar	•					•	

## ANNOTATION PRODUCT CODE

DCx<sub>1</sub>5x<sub>2</sub>x<sub>3</sub>[x<sub>4</sub>]x<sub>1</sub> | VERSION

- L level probe
- T pressure transmitter

x<sub>3</sub> | COMMUNICATION INTERFACE

- 1 RS 485 Modbus
- 2 I<sup>2</sup>C
- 3 IO-Link

x<sub>2</sub> | PRESSURE SENSOR

- 3 piezoresistive stainless steel silicon sensor (with media isolation)
- 5 capacitive ceramic sensor (Ø 32,4 mm)
- 6 piezoresistive ceramic thick film sensor
- 7 capacitive ceramics sensor (Ø 19mm)

x<sub>4</sub> | SPECIAL FEATURES

- P process connections in hygienic design



# DCT 531i

## Precision Pressure Transmitter with RS485 Modbus RTU

Stainless Steel Sensor

accuracy according to IEC 60770:  
0.1 % FSO

### Nominal pressure

from 0 ... 100 mbar up to 0 ... 400 bar

### Output signal

RS485 with Modbus RTU protocol

### Special characteristics

- ▶ transfer of pressure and temperature value
- ▶ perfect thermal behaviour
- ▶ excellent long term stability
- ▶ reset function

### Optional versions

- ▶ pressure port  
G 1/2" flush up to max. 40 bar
- ▶ pressure sensor welded
- ▶ customer specific versions

The DCT 531i is characterized by very good accuracy and excellent temperature behaviour and is therefore ideally suited for applications where precise pressure measurement is necessary (e.g. test benches, leakage tests, etc.).

Thanks to the integrated RS485 interface (based on the MODBUS RTU protocol), reliable and robust data transmission is available, which also works without problems over longer distances. Since the DCT 531i works directly with a master e.g. is coupled to a SPS, conversion losses of an analogue input card are avoided.

Different mechanical and electrical connections are available so that the DCT 531i can be used in various applications without any problems.

### Preferred areas of use are



Plant and machine engineering

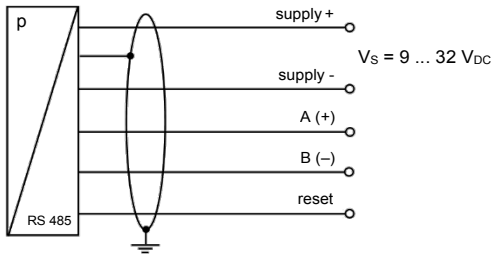


Energy industry

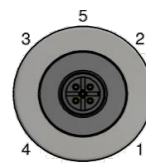
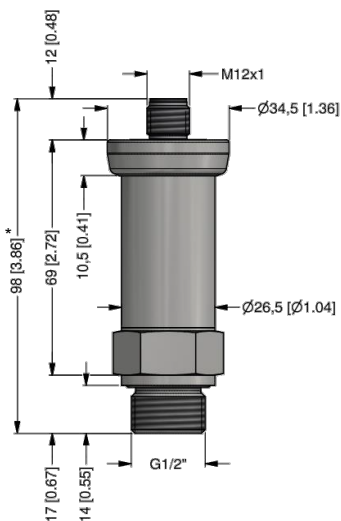
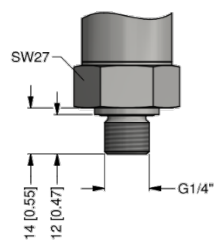


Modbus®

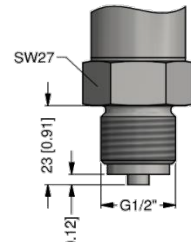
Input pressure range												
Nominal pressure gauge	[bar]	-1...0	0.10	0.16	0.25	0.40	0.60	1	1.6	2.5	4	6
Nominal pressure absolute	[bar]	-	-	-	-	0.40	0.60	1	1.6	2.5	4	6
Overpressure	[bar]	5	0.5	1	1	2	5	5	10	10	20	40
Burst pressure ≥	[bar]	7.5	1.5	1.5	1.5	3	7.5	7.5	15	15	25	50
Nominal pressure gauge/abs.	[bar]	10	16	25	40	60	100	160	250	400		
Overpressure	[bar]	40	80	80	105	210	600	600	1000	1000		
Burst pressure ≥	[bar]	50	120	120	210	420	1000	1000	1250	1250		
Vacuum resistance	p <sub>N</sub> ≥ 1 bar: unlimited vacuum resistance      p <sub>N</sub> < 1 bar: on request											
Output signal												
Digital	RS485 with Modbus RTU protocol (pressure & temperature)											
Supply												
Direct voltage	V <sub>S</sub> = 9 ... 32 V <sub>DC</sub>											
Performance												
Accuracy <sup>1</sup>	≤ ± 0.1 % FSO											
Long term stability	≤ ± 0.1 % FSO / year at reference conditions											
Measuring rate	500 Hz											
Delay time	500 msec											
<sup>1</sup> accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)												
Thermal effects (offset and span)												
Thermal error	≤ ± 0.02 % FSO / 10 K											
In compensated range	-20 ... 80 °C											
Permissible temperatures												
Medium	-25 ... 125 °C											
Electronics / environment	-25 ... 85 °C											
Storage	-40 ... 100 °C											
Electrical protection												
Short-circuit protection	permanent											
Reverse polarity protection	on supply connections no damage, but also no function											
Electromagnetic compatibility	emission and immunity according to EN 61326											
Mechanical stability												
Vibration	10 g RMS (20 ... 2000 Hz)      according to DIN EN 60068-2-6											
Shock	100 g / 11 msec      according to DIN EN 60068-2-27											
Materials												
Pressure port / housing	stainless steel 1.4404 (316 L)											
Seals	standard: FKM option: EPDM without <sup>2</sup> (welded version)      others on request											
Diaphragm	stainless steel 1.4435 (316 L)											
Media wetted parts	pressure port, seal, diaphragm											
<sup>2</sup> welded version only with pressure ports according to EN 837, p <sub>N</sub> ≤ 40 bar												
Miscellaneous												
Weight	approx. 210 g											
Current consumption	max. 10 mA											
Ingress protection	IP 67											
Installation position	any <sup>3</sup>											
Operational life	100 million load cycles											
CE-conformity	EMC Directive: 2014/30/EU Pressure Equipment Directive: 2014/68/EU (module A) <sup>4</sup>											
<sup>3</sup> Pressure transmitters are calibrated in a vertical position with the pressure connection down. If this position is changed on installation there can be slight deviations in the zero point for pressure ranges p <sub>N</sub> ≤ 1 bar.												
<sup>4</sup> This directive is only valid for devices with maximum permissible overpressure > 200 bar.												

**Wiring diagram****Pin configuration / electrical connection**

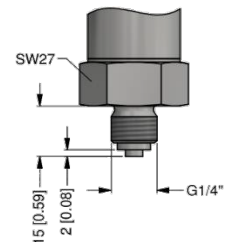
Electrical connection	M12x1, metal (5-pin)
Supply +	1
Supply -	3
A (+)	2
B (-)	4
Reset	5
Shield	plug housing

**Dimensions (mm / in)****standard**G1/2" DIN 3852  
with M12x1**options**

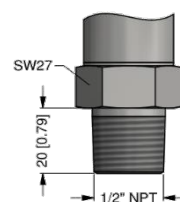
G1/4" DIN 3852



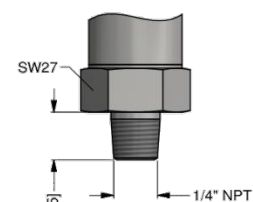
G1/2" EN 837



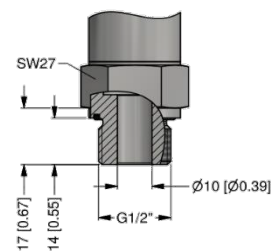
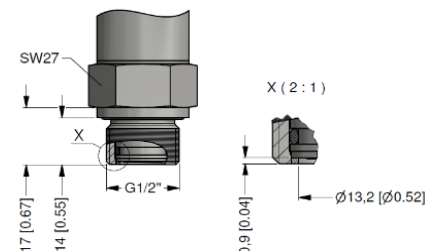
G1/4" EN 837



G1/2" NPT



G1/4" NPT

G1/2" DIN 3852  
open port ( $p_N \leq 40$  bar)G1/2" DIN 3852 with  
semi-flush sensor ( $p_N \leq 40$  bar)

\* with nominal pressure > 40 bar the length of devices increases by 9 mm [0.35 in]

⇒ metric threads and other versions on request



Configuration Modbus RTU					
Standard configuration	001	-	1	-	1
Address					
Address	001				
	...				
	247				
Baud Rate					
4800 Bd			0		
9600 Bd			1		
19200 Bd			2		
38400 Bd			3		
Parity					
None					0
Odd					1
Even					2
Configuration code (to specify with order)					
		-		-	

Ordering code DCT 531i

DCT 531i

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[illegible]<sup>1</sup> absolute pressure possible from 0.4 bar

<sup>2</sup> not possible for nominal pressure  $p_N > 40$  bar

<sup>3</sup> welded version only with pressure ports according to EN 837, possible for  $p_N \leq 40$  bar



# DCT 531

## Industrial Pressure Transmitter with RS485 Modbus RTU

Stainless Steel Sensor

accuracy according to IEC 60770:  
standard: 0.25 % FSO  
option: 0.1 % FSO

### Nominal pressure

from 0 ... 100 mbar up to 0 ... 400 bar

### output signal

RS485 with Modbus RTU protocol

### Special characteristic

- ▶ pressure value
- ▶ perfect thermal behaviour
- ▶ excellent long term stability
- ▶ reset function

### Optional versions

- ▶ pressure port  
G 1/2" flush up to max. 40 bar
- ▶ pressure sensor welded
- ▶ customer specific versions

The DCT 531 with RS485 interface uses the communication protocol Modbus RTU which has found the way in industrial communication as an open protocol. The Modbus protocol is based on a master slave architecture with which up to 247 slaves can be questioned by a master.

Due to the usage of high quality materials and components, the DCT 531 is suitable for almost every industrial application, if the medium is compatible with stainless steel 316L.

The modular concept of the device allows customized mechanical connections, so it is easy to adapt the pressure transmitter to different conditions on-site.

### Preferred areas of use are



Plant and machine engineering



Energy industry



Modbus®

Input pressure range												
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 $\geq$	[bar]	7.5	1.5	1.5	1.5	3	7.5	7.5	15	15	25	50

Nominal pressure gauge / absolute	[bar]	10	16	25	40	60	100	160	250	400
Overpressure	[bar]	40	80	80	105	210	600	600	1000	1000
Burst pressure $\geq$	[bar]	50	120	120	210	420	1000	1000	1250	1250
Vacuum resistance		$p_N \geq 1$ bar: unlimited vacuum resistance						$p_N < 1$ bar: on request		

Output signal	
Digital	RS 485 with Modbus RTU protocol (pressure)

Supply	
Direct current	$V_S = 9 \dots 32 V_{DC}$

Performance	
Accuracy <sup>1</sup>	standard: $\leq \pm 0.25$ % FSO option: $\leq \pm 0.10$ % FSO
Long term stability	$\leq \pm 0.1$ % FSO / year at reference conditions
Measuring rate	500 Hz
Delay time	500 msec

<sup>1</sup> accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)

Thermal effects (offset and span)	
Tolerance band	$\leq \pm 0.75$ % FSO
In compensated range	-20 ... 85 °C

Permissible temperatures	
Medium	-40 ... 125 °C
Electronics / environment	-40 ... 85 °C
Storage	-40 ... 100 °C

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	10 g RMS (25 ... 2000 Hz) according to DIN EN 60068-2-6
Shock	100 g / 11 msec according to DIN EN 60068-2-27

Materials	
Pressure port / housing	stainless steel 1.4404 (316 L)
Seals	standard: FKM option: EPDM; welded version <sup>2</sup> (for $p_N \leq 40$ bar) others on request
Diaphragm	stainless steel 1.4435 (316 L)
Media wetted parts	pressure port, seal, diaphragm

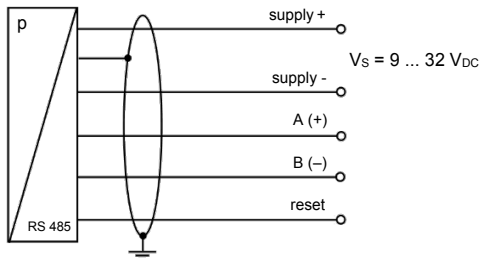
<sup>2</sup> welded version only with pressure ports according to EN 837,  $p_N \leq 40$  bar

Miscellaneous	
Weight	approx. 210 g
Ingress protection	IP 67
Current consumption	max. 10 mA
Operational life	100 million load cycles
Installation position	any <sup>3</sup>
CE-conformity	EMC Directive: 2014/30/EU Pressure Equipment Directive: 2014/68/EU (module A) <sup>4</sup>

<sup>3</sup> Pressure transmitters are calibrated in a vertical position with the pressure connection down. If this position is changed on installation there can be slight deviations in the zero point for pressure ranges  $p_N \leq 1$  bar.

<sup>4</sup> This directive is only valid for devices with maximum permissible overpressure > 200 bar

## Wiring diagram

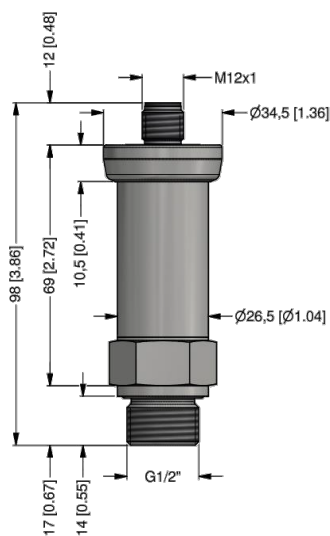


## Pin configuration / electrical connection

Electrical connection	M12x1, metal (5-pin)	
Supply +	1	
Supply -	3	
A (+)	2	
B (-)	4	
Reset	5	
Shield	plug housing	

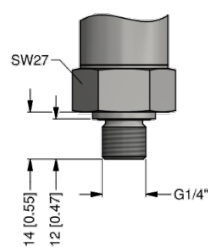
## Dimensions (mm / in)

### standard

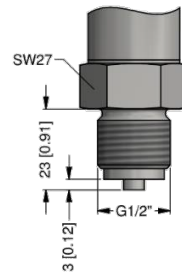


G1/2" DIN 3852  
with M12x1

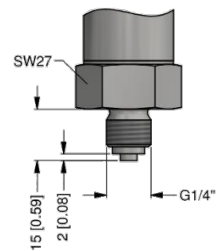
### options



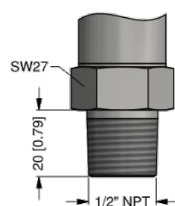
G1/4" DIN 3852



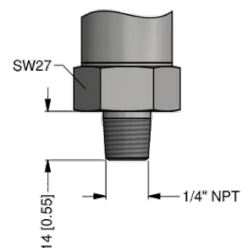
G1/2" EN 837



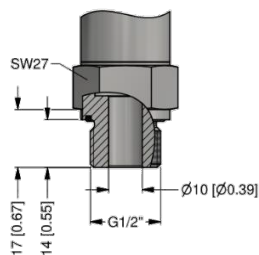
G1/4" EN 837



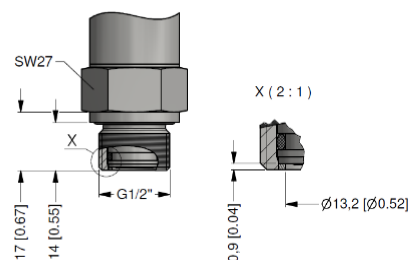
1/2" NPT



1/4" NPT



G1/2" DIN 3852  
open port ( $p_N \leq 40 \text{ bar}$ )



G1/2" DIN 3852 with  
semi-flush sensor ( $p_N \leq 40 \text{ bar}$ )

⇒ metric threads and other versions on request

Configuration Modbus RTU					
Standard configuration	001	-	1	-	1
Address					
Address	001				
	...				
	247				
Baud Rate					
4800 Bd			0		
9600 Bd			1		
19200 Bd			2		
38400 Bd			3		
Parity					
None					0
Odd					1
Even					2
Configuration code (to specify with order)		-		-	

Ordering code DCT 531

## DCT 531

			-					-			-		-				-				-		-			
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Pressure					
	gauge absolute <sup>1</sup>	D	C	7	
		D	C	8	
Input	[bar]				
	0.10 <sup>1</sup>			1	0 0 0
	0.16 <sup>1</sup>			1	6 0 0
	0.25 <sup>1</sup>			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
	60			6	0 0 2
	100			1	0 0 3
	160			1	6 0 3
	250			2	5 0 3
	400			4	0 0 3
	-1 ... 0	X	1	0	2
	customer			9	9 9 9
Output					
	RS485 Modbus RTU			L	5
Accuracy					
standard:	0.25 % FSO			2	
option:	0.10 % FSO			1	
	customer			9	
Electrical connection					
	male plug M12x1 (5-pin) / metal customer			N	1 1 9 9 9
Mechanical connection					
	G1/2" DIN 3852				1 0 0
	G1/2" EN 837				2 0 0
	G1/4" DIN 3852				3 0 0
	G1/4" EN 837				4 0 0
	G1/2" DIN 3852 with semi-flush sensor <sup>2</sup>			F	0 0
	G1/2" DIN 3852 open pressure port <sup>2</sup>			H	0 0
	1/2" NPT			N	0 0
	1/4" NPT			N	4 0
	customer			9	9 9
Seal					
	FKM				1
	EPDM				3
	without (welded version) <sup>3</sup>				2
	customer				9
Special version					
	standard				0 0 0
	customer				9 9 9

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

<sup>2</sup> not possible for nominal pressure  $p_N > 40$  bar

<sup>3</sup> welded version only with pressure ports according to EN 837, possible for  $p_N \leq 40$  bar



# DCT 532

## Industrial Pressure Transmitter with i²C interface

Stainless Steel Sensor

Accuracy according to IEC 60770:  
standard:  $\leq \pm 0.35 \% \text{ FSO}$   
option:  $\leq \pm 0.25 \% \text{ FSO}$

### Nominal pressure

from 0 ... 100 mbar up to 0 ... 400 bar

### Digital output signal

- i²C
- bus frequency max. 400 kHz
- configuration of data format
- interrupt signal

### Special characteristic

- ▶ perfect thermal behaviour
- ▶ excellent long term stability

### Optional versions

- ▶ pressure port  
G 1/2" flush up to 40 bar
- ▶ welded sensor
- ▶ customer specific versions

Contrary to the industrial pressure transmitter with analogue signal, the DCT 532 has a digital i²C-interface. i²C has a master-slave topology, whereby you can use up to 127 devices at one master. In addition to the typical settings, as slave address, data format, etc., it is possible to do special parametrisation for pressure unit and more.

Due to the usage of high quality materials and components, the DCT 532 is suitable for almost every industrial application, if medium is compatible with stainless steel 316L.

The modular concept of the pressure transmitter allows customized electrical or mechanical connections, so it is easy to adapt the pressure transmitter to different conditions on-site.

### Preferred areas of use are



Plant and machine engineering



Energy industry





Input pressure range												
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 abs.	[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 $\geq$	[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	60	100	160	250	400
Overpressure	[bar]	40	80	80	105	210	600	600	1000	1000
Burst pressure $\geq$	[bar]	50	120	120	210	420	1000	1000	1250	1250
Vacuum resistance		$p_N \geq 1$ bar: unlimited vacuum resistance $p_N < 1$ bar: on request								

Output signal / Supply	
i <sup>2</sup> C	$V_S = 3.5 \dots 5.5 V_{DC}$

Performance	
Accuracy <sup>1</sup>	standard for $p_N \geq 0.4$ bar: $\leq \pm 0.35$ % FSO standard for $p_N < 0.4$ bar: $\leq \pm 0.50$ % FSO option for $p_N \geq 0.4$ bar: $\leq \pm 0.25$ % FSO
Max. I/O current	10 mA
Long term stability	$\leq \pm 0.1$ % FSO / year at reference conditions
Response time	1.5 msec + transmission time (depending on bus frequency)
Measuring rate	500 Hz

<sup>1</sup> accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)

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

Permissible temperatures	
Medium	-25 ... 125 °C
Electronics / environment	-25 ... 85 °C
Storage	-40 ... 85 °C

Electrical protection	
Short-circuit protection	permanent
Reverse polarity protection	by exchanged supply connections no damage, but also no function by exchanged communication with signal lines it can come according to constellation to damages.
Electromagnetic compatibility	emission and immunity according to EN 61326

Mechanical stability	
Vibration	10 g RMS (25 ... 2000 Hz) according to DIN EN 60068-2-6
Shock	500 g / 1 msec according to DIN EN 60068-2-27

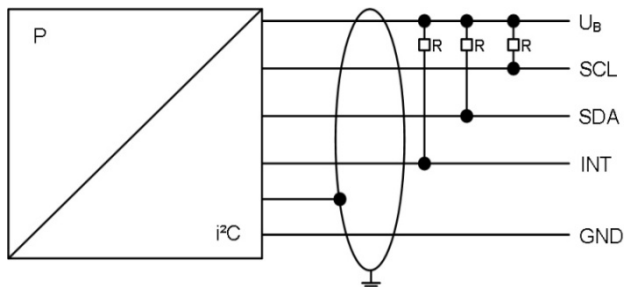
Materials	
Pressure port / Housing	stainless steel 1.4404 (316 L)
Seals (media wetted)	standard: FKM options: EPDM welded version <sup>2</sup> (for $p_N \leq 40$ bar) others on request
Diaphragm	stainless steel 1.4435 (316 L)
Media wetted parts	pressure port, seal, diaphragm

<sup>2</sup> welded version only with pressure ports according to EN 837,  $p_N \leq 40$  bar

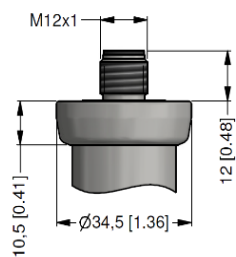
Miscellaneous	
Current consumption	$< 15$ mA
Weight	approx. 140 g
Ingress protection	IP 67
Installation position	any <sup>3</sup>
Operational life	100 million load cycles
CE-conformity	EMC Directive: 2014/30/EU Pressure Equipment Directive: 2014/68/EU (module A) <sup>4</sup>

<sup>3</sup> Pressure transmitters are calibrated in a vertical position with the pressure connection down. If this position is changed on installation there can be slight deviations in the zero point for pressure ranges  $p_N \leq 1$  bar.

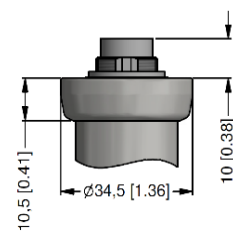
<sup>4</sup> This directive is only valid for devices with maximum permissible overpressure  $> 200$  bar

**Wiring diagrams****Pin configuration**

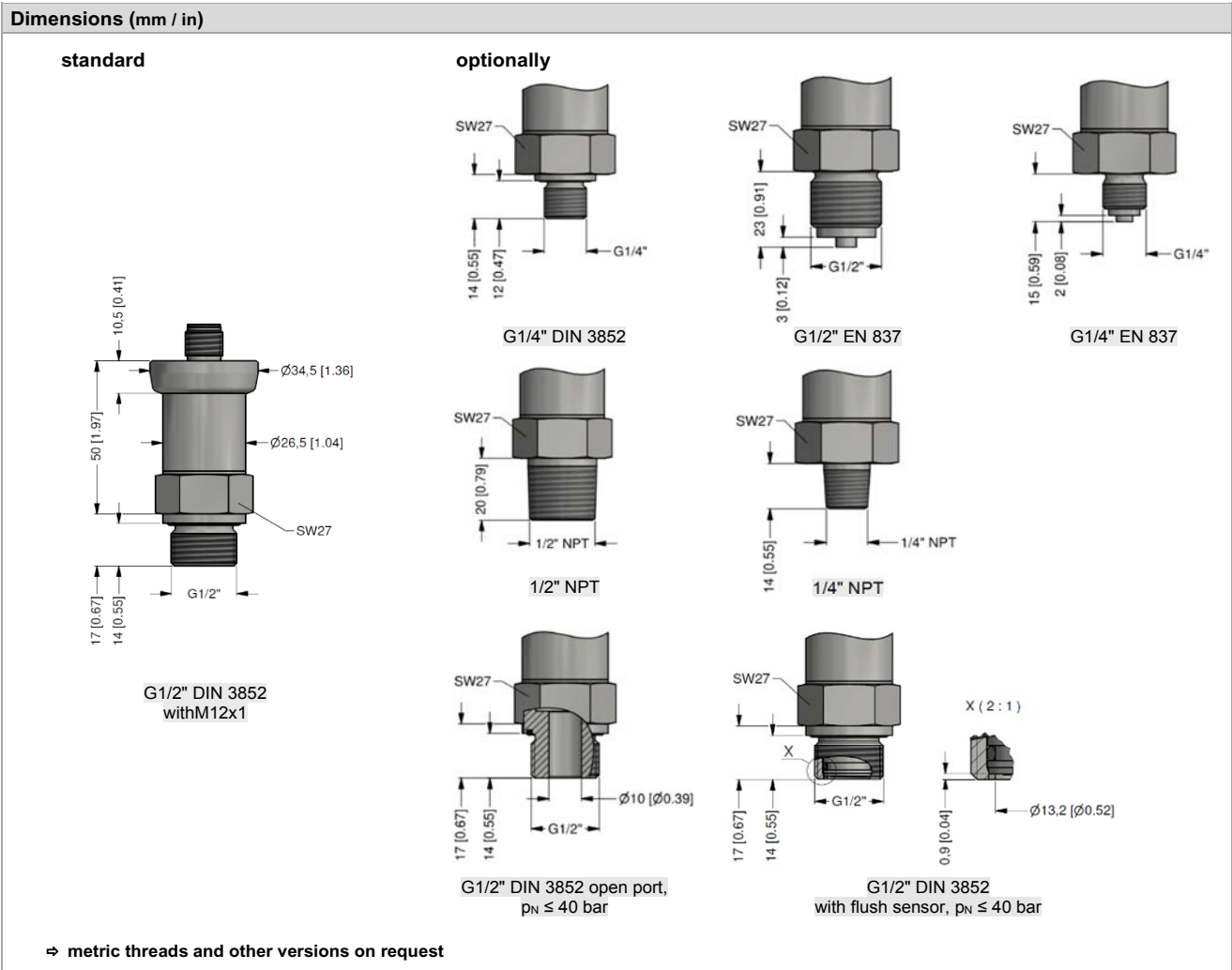
Electrical connection	M12x1 / metal (5-pin)	Binder 723 (5-pin)
Supply +	1	1
Supply -	3	3
SDA	2	2
SCL	4	4
INT	5	5
Shield	housing	housing

**Electrical connections (dimensions mm / in)****standard**

M12x1 (5-pin)

**optionally**

Binder Serie 723 (5-pin)



Configuration i <sup>2</sup> C-interface															
Stand configuration	0	5	0	-	0	-	0	-	0	-	0	-	0	0	1
Slave address															
address	0	0	1												
		...													
	1	2	7												
Type of result register															
32bit IEEE float					0										
16bit Integer					1										
Byte order of values															
Low byte first						0									
High byte first						1									
Mode of result register															
Value							0								
Percent of nominal							1								
Restore of address pointer															
No restore								0							
To last set address on next start								1							
Digital meaning															
Count of result												0	0	0	1
												...			
												1	0	0	0
Configuration code (has to be defined with the order)															
				-		-		-		-					

			-				-		-		-			-			-		-		
--	--	--	---	--	--	--	---	--	---	--	---	--	--	---	--	--	---	--	---	--	--

<sup>1</sup> absolute pressure possible from 0.4 bar  
<sup>2</sup> not possible for nominal pressure  $p_N > 40$  bar  
<sup>3</sup> welded version only with pressure ports according to EN 837, possible for  $p_N \leq 40$  bar



# DCT 533

## Industrial Pressure Transmitter with IO-Link Interface

Stainless Steel Sensor

accuracy according to IEC 60770:  
standard:  $\leq \pm 0.35 \% \text{ FSO}$   
option:  $\leq \pm 0.25 \% \text{ FSO}$

### Nominal pressure

from 0 ... 100 mbar up to 0 ... 400 bar

### Digital output signal

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

### Special characteristic

- ▶ perfect thermal behaviour
- ▶ excellent long term stability

### Optional versions

- ▶ pressure port  
G 1/2" flush up to 40 bar
- ▶ welded sensor
- ▶ customer specific versions

IO-Link is a digital interface for sensors and actuators, which is worldwide standardized by IEC 61131-9. IO-Link does not have a bus topology, but it is a powerful point-to-point communication, where the device can be parametrized, and the measured values transferred. The integration to the master is easy by using the IODD-file.

The sensor technology of the DCT 533 is the same as those of the proven pressure transmitter DMP 331 / DMP 333, whereby the DCT 533 is suitable for almost every industrial application, if medium is compatible with stainless steel 316L.

The modular concept of the pressure transmitter allows customized electrical or mechanical connections, so it is easy to adapt the DCT 533 to different conditions on-site.

### Preferred areas of use are



Plant and machine engineering



Energy industry



Input pressure range												
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 abs.	[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	60	100	160	250	400
Overpressure	[bar]	40	80	80	105	210	600	600	1000	1000
Burst pressure $\geq$	[bar]	50	120	120	210	420	1000	1000	1250	1250
Vacuum resistance		$p_N \geq 1$ bar: unlimited vacuum resistance					$p_N < 1$ bar: on request			

Output signal / Supply	
Standard	IO-Link (measured value transmission) $V_S = 18 \dots 30 V_{DC}$ SIO (switching output)
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>1</sup>	standard for $p_N \geq 0.4$ bar: $\leq \pm 0.35$ % FSO for $p_N < 0.4$ bar: $\leq \pm 0.50$ % FSO option for $p_N \geq 0.4$ bar: $\leq \pm 0.25$ % FSO
Switching current (SIO-Mode)	max. 200 mA
Switching frequency	max. 200 Hz
Switching cycles	$> 100 \times 10^6$
Long term stability	$\leq \pm 0.1$ % FSO / year at reference conditions
Turn-on time	SIO mode: approx. 20 msec
Response time	SIO mode: $< 4$ msec
Measuring rate	400 Hz

<sup>1</sup> accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)

Thermal effects (offset and span)				
Nominal pressure p <sub>N</sub>	[bar]	-1 ... 0	< 0.40	≥ 0.40
Tolerance band	[% FSO]	≤ ± 0.75	≤ ± 1	≤ ± 0.75
in compensated range	[°C]	-20 ... 85	0 ... 70	-20 ... 85

Permissible temperatures	
Medium	-25 ... 125 °C
Electronics / environment	-25 ... 85 °C
Storage	-40 ... 85 °C

Electrical protection	
Short-circuit protection	permanent
Reverse polarity protection	no damage, but also no function
Electromagnetic compatibility	emission and immunity according to EN 61326

Mechanical stability	
Vibration	10 g RMS (25 ... 2000 Hz) according to DIN EN 60068-2-6
Shock	500 g / 1 msec according to DIN EN 60068-2-27

Materials	
Pressure port / housing	stainless steel 1.4404 (316 L)
Seals (media wetted)	standard: FKM options: EPDM welded version <sup>2</sup> (for $p_N \leq 40$ bar) others on request
Diaphragm	stainless steel 1.4435 (316 L)
Media wetted parts	pressure port, seal, diaphragm

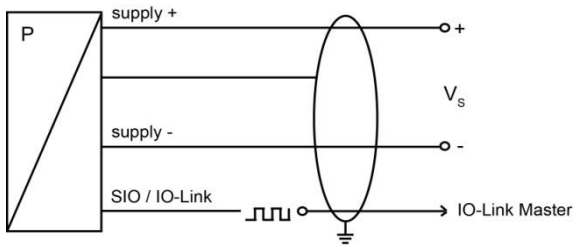
<sup>2</sup> welded version only with pressure ports according to EN 837,  $p_N \leq 40$  bar

Miscellaneous	
Current consumption	max. 15 mA
Weight	approx. 140 g
Installation position	any <sup>3</sup>
Protection class	IP 67
Operational life	100 million load cycles
CE-conformity	EMC Directive: 2014/30/EU Pressure Equipment Directive: 2014/68/EU (module A) <sup>4</sup>


<sup>3</sup> Pressure transmitters are calibrated in a vertical position with the pressure connection down. If this position is changed on installation there can be slight deviations in the zero point for pressure ranges  $p_N \leq 1$  bar.

<sup>4</sup> This directive is only valid for devices with maximum permissible overpressure  $> 200$  bar.

## Wiring diagrams



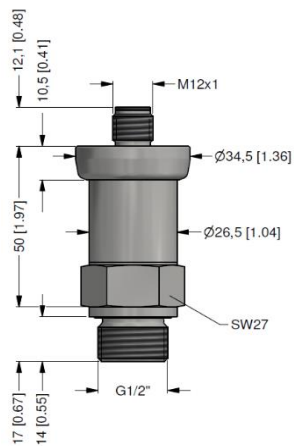
## Pin configuration

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

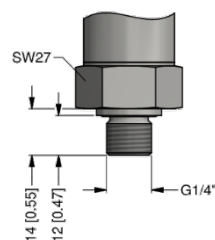
### Dimensions (mm / in)

**standard**

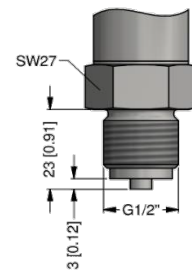
**optionally**



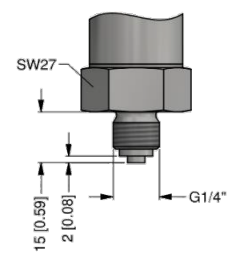
G1/2" DIN 3852  
with M12x1



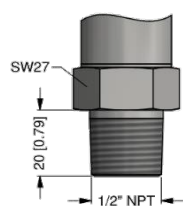
G1/4" DIN 3852



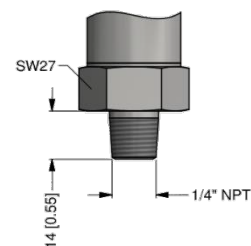
G1/2" EN 837



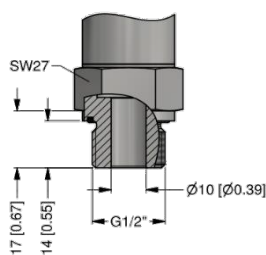
G1/4" EN 837



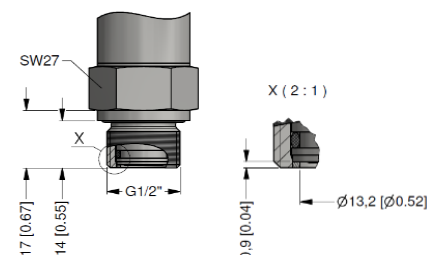
1/2" NPT



1/4" NPT



G1/2" DIN 3852 open port,  
 $p_N \leq 40$  bar



G1/2" DIN 3852  
with flush sensor,  $p_N \leq 40$  bar

⇒ metric threads and other versions on request

Ordering code DCT 533

## DCT 533

□□ - □□□ - □ - □ - □□ - □□□ - □ - □□

Pressure									
	gauge		D	C	2				
	absolute	1	D	C	3				
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	
	60				6	0	0	2	
	100				1	0	0	3	
	160				1	6	0	3	
	250				2	5	0	3	
	400				4	0	0	3	
	-1 ... 0				X	1	0	2	
	customer				9	9	9	9	consult
Output									
	IO-Link / SIO				IO				
Accuracy									
standard for p <sub>N</sub> ≥ 0.4 bar	0.35 % FSO				3				
standard for p <sub>N</sub> < 0.4 bar	0.50 % FSO				5				
option for p <sub>N</sub> ≥ 0.4 bar	0.25 % FSO				2				
	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					1	0	0	
	G1/2" EN 837					2	0	0	
	G1/4" DIN 3852					3	0	0	
	G1/4" EN 837					4	0	0	
	G1/2" DIN 3852					F	0	0	
	with flush sensor <sup>2</sup>								
	G1/2" DIN 3852 open pressure port <sup>2</sup>					H	0	0	
	1/2" NPT					N	0	0	
	1/4" NPT					N	4	0	
	customer					9	9	9	consult
Seals									
	FKM						1		
	EPDM						3		
	without (welded version) <sup>3</sup>						2		
	customer						9		consult
Special version									
	standard						0	0	0
	customer						9	9	9
									consult

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

<sup>2</sup> not possible for nominal pressure  $p_N > 40$  bar

<sup>3</sup> welded version only with pressure ports according to EN 837, possible for  $p_N \leq 40$  bar





# DCT 531P

## Industrial Pressure Transmitter with RS485 Modbus RTU

Process Connections with Flush Welded Stainless Steel Diaphragm

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

### Nominal pressure

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

### Output signal

RS485 with Modbus RTU protocol

### Special characteristics

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

### Optional versions

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

The pressure transmitter DCT 531P was designed for use in the food / beverage and pharmaceutical industry. The compact design with hygienic versions guarantees an outstanding performance in terms of accuracy, thermal behaviour and long term stability.

The integrated RS485 interface is characterized by a robust and reliable data transmission that works failure-free even over long distances.

Additionally, the modular construction concept of the device allows to combine different electrical and mechanical connections, so it is easy to adapt the pressure transmitter to different conditions on-site.

### 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



Modbus®

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
Nominal pressure absolute	[bar]	-	-	-	-	0.40	0.60	1	1.6
Overpressure	[bar]	5	0.5	1	1	2	5	5	10
Burst pressure ≥	[bar]	7.5	1.5	1.5	1.5	3	7.5	7.5	15

[illegible]<sup>1</sup> consider the pressure resistance of fitting and clamps

Output signal / Supply	
Standard	RS485 with Modbus RTU protocol / $V_S = 9 \dots 32 V_{DC}$

Performance	
Accuracy <sup>2</sup>	standard $\leq \pm 0.25$ % FSO option $\leq \pm 0.10$ % FSO
Long term stability	$\leq \pm 0.1$ % FSO / year at reference conditions
Measuring rate	500 Hz
Delay time	500 msec

<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	

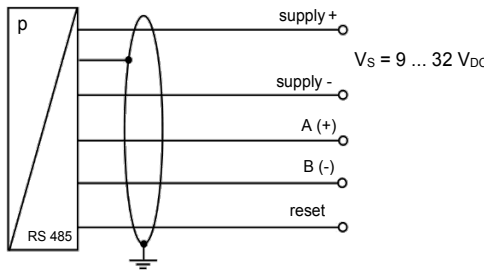
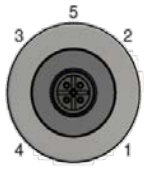
<sup>5</sup> max. temperature of the medium for nominal pressure gauge > 0 bar: 150 °C for 60 minutes with a max. environmental temperature of 50 °C

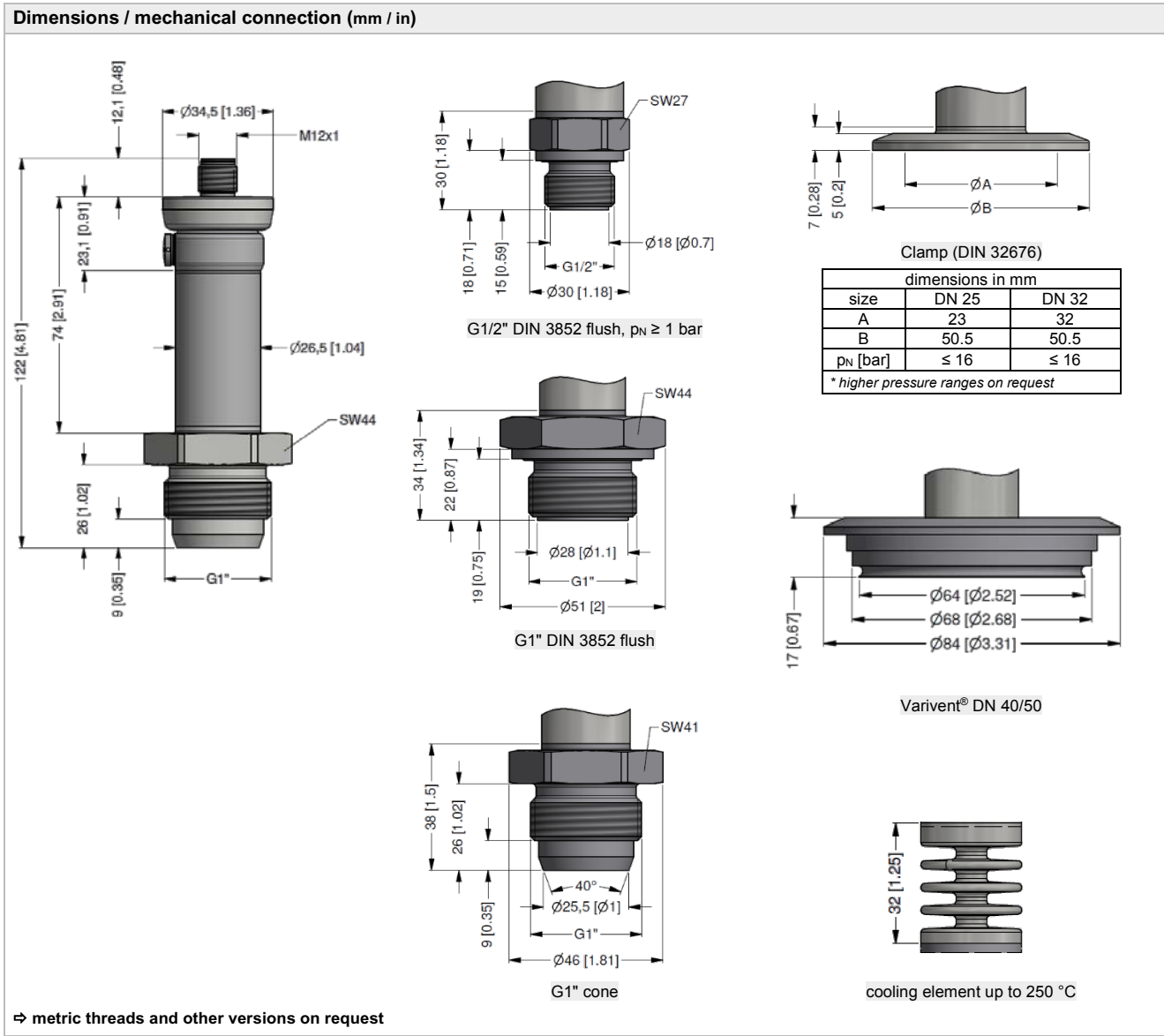
<sup>6</sup> also for  $p_{abs} \leq 1$  bar

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	according to DIN EN 60068-2-6	G 1/2": 20 g RMS (25...2000 Hz) others: 10 g RMS (25...2000 Hz)	
Shock	according 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 (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)	
Diaphragm	stainless steel 1.4435 (316 L)	
Seal	standard: FKM medium temperatures ≤ 200 °C option: FFKM (recommended for medium temperatures > 200 °C) without: Clamp, dairy pipe, Varivent® others on request	
Media wetted parts	pressure port, seal, diaphragm	
Miscellaneous		
Weight	approx. 200 g	
Current consumption	max. 10 mA	
Surface roughness	pressure port R <sub>a</sub> < 0.8 μm (media wetted parts) diaphragm R <sub>a</sub> < 0.15 μm weld seam R <sub>a</sub> < 0.8 μm	
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 <sub>N</sub> ≤ 2 bar have to be specified in the order)	
CE-conformity	EMC Directive: 2014/30/EU	
Wiring diagram		
RS 485 / Modbus RTU		
		
Pin configuration / electrical connection		
Electrical connection	M12x1 / metal (5-pin), IP 67	
Supply +	1	
Supply –	3	
A (+)	2	
B (–)	4	
Reset	5	
Shield	plug housing	



Configuration Modbus RTU					
Standard configuration		001	-	1	-
Address		001			
		...			
		247			
Baud Rate					
4800 Bd				0	
9600 Bd				1	
19200 Bd				2	
38400 Bd				3	
Parity					
None					0
Odd					1
Even					2
Configuration code (to specify with order)			-		-





# 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

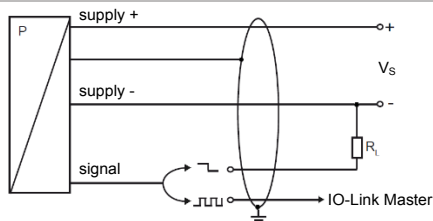
- ▶ inspection certificate 3.1 according to EN 10204
- ▶ test report 2.2 according to EN 10204



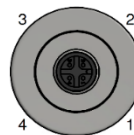
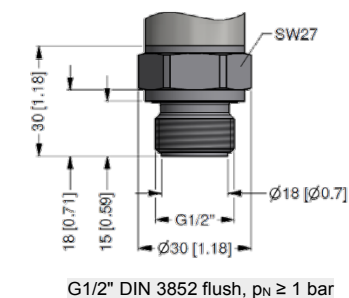
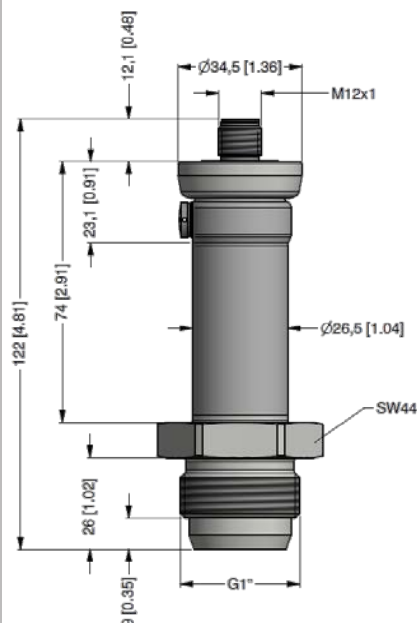
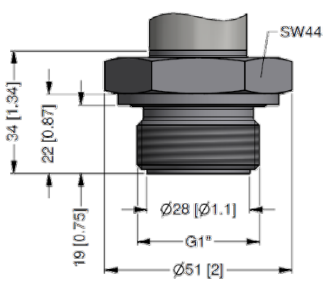
Input pressure range <sup>1</sup>												
Nominal pressure gauge	[bar]	-1...0	0.10	0.16	0.25	0.40	0.60	1	1.6	2.5	4	6
Nominal pressure absolute	[bar]	-	-	-	-	0.40	0.60	1	1.6	2.5	4	6
Overpressure	[bar]	5	0.5	1	1	2	5	5	10	10	20	40
Burst pressure ≥	[bar]	7.5	1.5	1.5	1.5	3	7.5	7.5	15	15	25	50
Nominal 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) 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 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 (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										

**Miscellaneous**

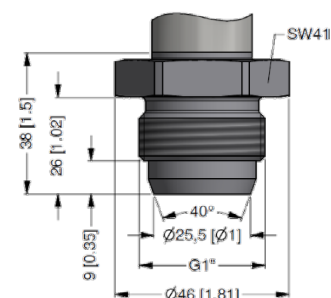
Weight	approx. 200 g
Current consumption	max. 15 mA
Operational life	100 million load cycles
Installation position	any (standard calibration in a vertical position with the pressure port connection down; differing installation position for $p_N \leq 2$ bar have to be specified in the order)
CE-conformity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

**Wiring diagram****Pin configuration / electrical connection**

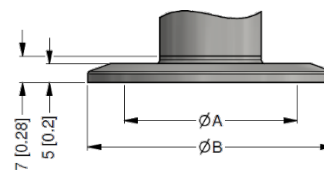
Electrical connection	M12x1 / metal (4-pin)
Supply +	1
Supply -	3
SIO / IO Link	4
Shield	plug housing

**Dimensions / mechanical connection (mm / in)**G1/2" DIN 3852 flush,  $p_N \geq 1$  bar

G1" DIN 3852 flush



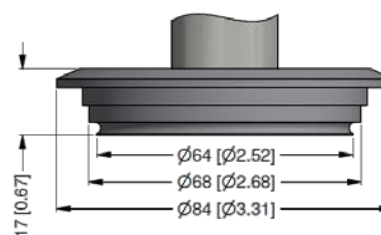
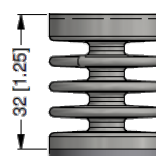
G1" cone



Clamp (DIN 32676)

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 250 °C

⇒ metric threads and other versions on request



Ordering code DCT 533P

DCT 533P

[illegible][illegible]<sup>1</sup> absolute pressure possible from 0.4 bar

Varivent® is a brand name of GEA Tuchenhausen GmbH, Hastelloy® is a brand name of Haynes International Inc.



# DCT 553P

## Industrial Pressure Transmitter with IO-Link Interface

Process Connections with semi-flush ceramic diaphragm

accuracy according to IEC 60770:  
Standard: 0.35 % FSO  
Option: 0.25 % FSO

### Nominal pressure

from 0 ... 40 mbar up to 0 ... 20 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
- ▶ high purity ceramic 99.9 % Al<sub>2</sub>O<sub>3</sub> diaphragm
- ▶ high overpressure capability
- ▶ ingress protection IP 67 / IP 69

### Optional versions

- ▶ different process connections

The pressure transmitter DCT 553P is used in the food and pharmaceutical industries or in applications where a dead space-free process connection is required. A capacitive ceramic pressure sensor developed in-house is used as the basic sensor, which is characterized by a high overload and excellent surface quality.

The special design prevents the condensation inside the pressure transmitter and thus failure in applications with large temperature changes.

The integrated, standardised IO-Link interface increases productivity and supports the operator in service and maintenance.

### Preferred areas of use are



Food industry



Chemical and petrochemical industry

### Material and test certificates

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



Input pressure range																
Nominal pressure gauge	[bar]	0.04	0.06	0.1	0.16	0.25	0.4	0.6	1	1.6	2.5	4	6	10	16	20
Nominal pressure absolute	[bar]	on request					0.4	0.6	1	1.6	2.5	4	6	10	16	20
Overpressure	[bar]	2	2	4	4	6	6	8	8	15	25	25	35	35	45	45
Burst pressure $\geq$	[bar]	-0.2		-0.3		-0.5				-1						

Output signal / Supply	
Standard	IO-Link (measured value transmission) $V_S = 18 \dots 30 V_{DC}$ SIO (switching output)
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>1</sup>	standard: $\leq \pm 0.35 \% \text{ FSO}$ option for $p_N \geq 0.6 \text{ bar}$ : $\leq \pm 0.25 \% \text{ FSO}$
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: $< 4 \text{ msec}$
Measuring rate	400 Hz

<sup>1</sup> accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)

Thermal effects (offset and span)	
Tolerance band	$\leq \pm 1 \% \text{ FSO}$
In compensated range	$-20 \dots 80 \text{ }^\circ\text{C}$

Permissible temperatures	
Medium	$-40 \dots 125 \text{ }^\circ\text{C}$
Electronics / environment	$-40 \dots 85 \text{ }^\circ\text{C}$
Storage	$-40 \dots 100 \text{ }^\circ\text{C}$

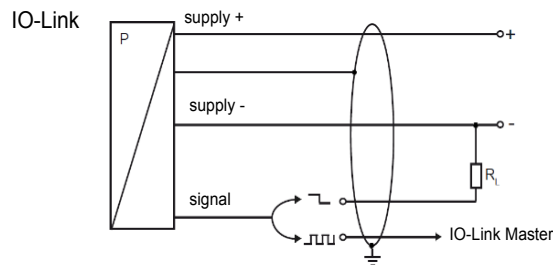
Electrical protection	
Short-circuit protection	permanent
Reverse polarity protection	on supply connection no damage, but also no function
Electromagnetic compatibility	emission and immunity according to EN 61326

Mechanical stability	
Vibration	10 g RMS (20 ... 2000 Hz) according to DIN EN 60068-2-6
Shock	100 g / 1 msec according to DIN EN 60068-2-27

Materials	
Pressure port	stainless steel 1.4404 (316L)
Housing	stainless steel 1.4404 (316L)
Seals	FKM EPDM others on request
Diaphragm	ceramic $\text{Al}_2\text{O}_3$ 99.9 %
Media wetted parts	pressure port, seals, diaphragm

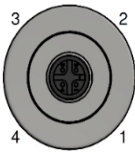
Miscellaneous	
Current consumption	max. 15 mA
Weight	min. 200 g
Installation position	any
Operational life	100 million load cycles
CE-conformity	EMC-directive: 2014/30/EU

Wiring diagram

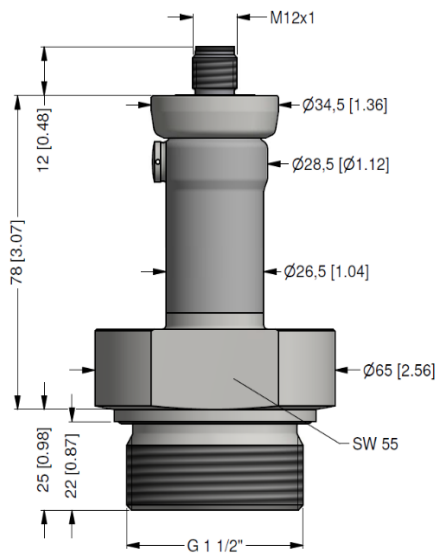


Pin configuration / electrical connection

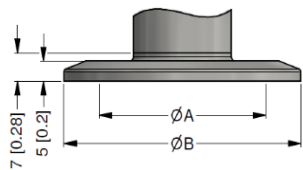
Electrical connection	M12x1 / metal (4-pin)
Supply +	1
Supply -	3
SIO / IO Link	4
Shield	housing



Dimensions / mechanical connection (mm / in)



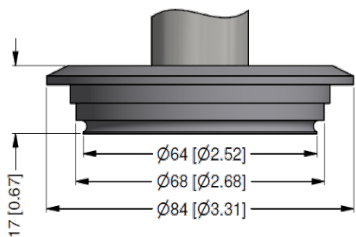
G 1 1/2" flush (DIN 3852)



Clamp (DIN 32676)

dimensions in mm		
size	DN 25	DN 50
A	23	45
B	50.5	64
p <sub>N</sub> [bar]	≤ 16	≤ 16

\* higher pressure ranges on request



Varivent® DN 40/50 (p<sub>N</sub> ≤ 10 bar)





# DCT 561

## Industrial Pressure Transmitter with RS485 Modbus RTU

Ceramic Sensor

accuracy according to IEC 60770:  
0.5 % FSO

### Nominal pressure

from 0 ... 600 mbar up to 0 ... 600 bar

### Output signal

RS485 with Modbus RTU protocol

### Special characteristic

- ▶ good thermal behaviour
- ▶ good long term stability
- ▶ reset function

### Optional versions

- ▶ pressure port G 1/2" open port PVDF for aggressive media (up to 60 bar)
- ▶ oxygen application

The DCT 561 with RS485 interface uses the communication protocol Modbus RTU which has found the way in industrial communication as an open protocol. The Modbus protocol is based on a master slave architecture with which up to 247 slaves can be questioned by a master – the data will transfer in binary form.

The sensor technology of the DCT 561 is the same as those of the proven pressure transmitter DMK 331, whereby the DCT 561 is suitable for pasty, polluted and aggressive media as well as for low-pressure oxygen applications.

The modular concept of the pressure transmitter allows customized electrical or mechanical connections, so it is easy to adapt the DCT 561 to different conditions on-site.

### Preferred areas of use are



Plant and machine engineering



Environmental engineering  
(water - sewage - recycling)



Medical technology



Modbus®

Input pressure range <sup>1</sup>									
Nominal pressure gauge [bar]	-1 ... 0	0.6	1	1.6	2.5	4	6	10	16
Nominal pressure absolute [bar]	-	0.6	1	1.6	2.5	4	6	10	16
Overpressure [bar]	3	2	3	5	5	12	12	20	50
Burst pressure ≥ [bar]	4	4	4	7	7.5	15	18	30	70

Nominal pressure gauge / absolute	[bar]	25	40	60	100	160	250	400	600
Overpressure	[bar]	50	120	120	200	400	400	650	800
Burst pressure ≥	[bar]	75	150	180	300	500	750	1000	1100
Vacuum resistance	unlimited vacuum resistance								
<sup>1</sup> PVDF pressure port possible for nominal pressure ranges up to 60 bar									

Output signal	
Digital (pressure)	RS485 with Modbus RTU protocol
Supply	
Direct current	$V_S = 9 \dots 32 V_{DC}$
Performance	
Accuracy <sup>2</sup>	$\leq \pm 0.5 \% \text{ FSO}$
Long term stability	$\leq \pm 0.3 \% \text{ FSO} / \text{year}$ at reference conditions
Measuring rate	500 Hz
Delay time	500 msec

<sup>2</sup> accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)

Thermal effects (offset and span) / Permissible temperatures	
Thermal error	$\leq \pm 0.2 \% \text{ FSO} / 10 \text{ K}$
In compensated range	0 ... 85 °C
Permissible temperatures <sup>3</sup>	medium: -25 ... 125 °C      electronics / environment: -25 ... 85 °C      storage: -40 ... 80 °C
<sup>3</sup> for pressure port in PVDF the medium temperature is -25 ... 60 °C	

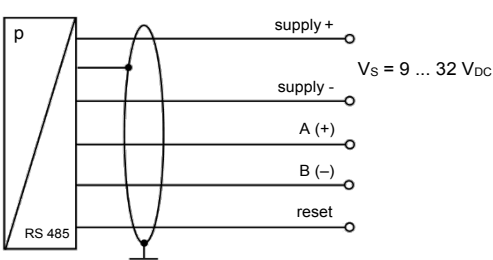
Electrical protection	
Short-circuit protection	permanent
Reverse polarity protection	no damage, but also no function
Electromagnetic compatibility	emission and immunity according to EN 61326

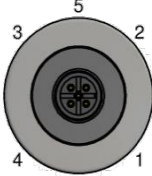
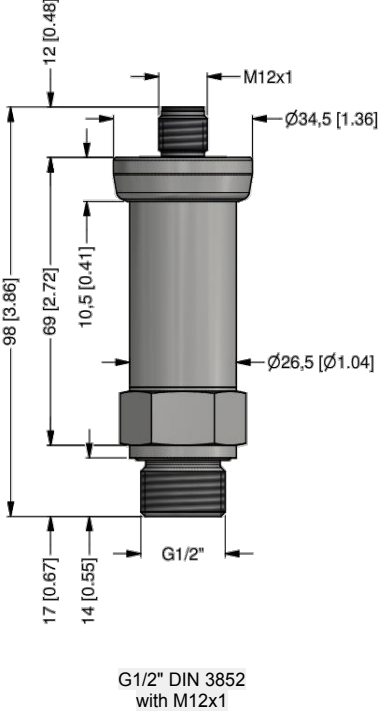
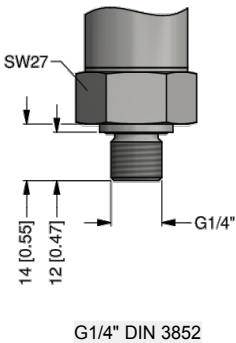
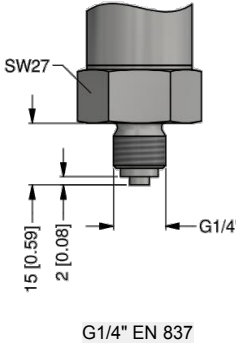
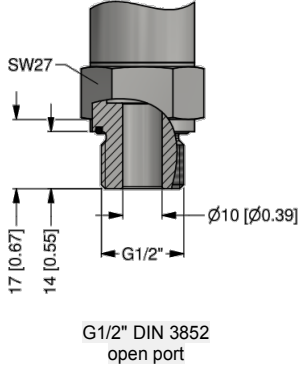
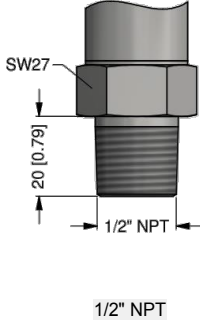
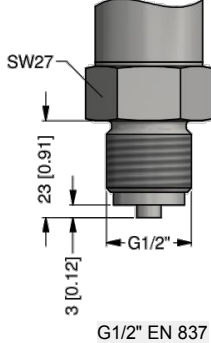
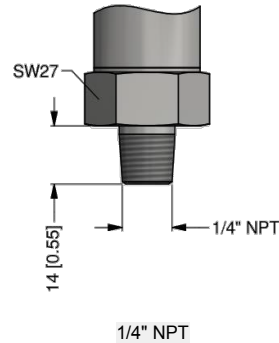
Mechanical stability	
Vibration	10 g RMS (25 ... 2000 Hz)      according to DIN EN 60068-2-6
Shock	500 g / 1 msec      according to DIN EN 60068-2-27

Materials	
Pressure port	standard: stainless steel 1.4404 (316 L) optional for G1/2" open port with nominal pressure range up to 60 bar: PVDF      others on request
Housing	stainless steel 1.4404 (316L)
Seals	standard: FKM options: EPDM (for $p_N \leq 160 \text{ bar}$ )      others on request
Diaphragm	ceramic $\text{Al}_2\text{O}_3$ 96 %
Media wetted parts	pressure port, seal, diaphragm

Miscellaneous	
Option oxygen application	for $p_N \leq 25 \text{ bar}$ : O-ring in FKM Vi 567 (with BAM-approval); permissible maximum values are 25 bar / 150 °C
Current consumption	max. 10 mA
Weight	approx. 210 g
Installation position	any
Protection class	IP 67
Operational life	100 million load cycles
CE-conformity	EMC Directive: 2014/30/EU      Pressure Equipment Directive: 2014/68/EU (module A) <sup>4</sup>

<sup>4</sup> This directive is only valid for devices with maximum permissible overpressure > 200 bar

Wiring diagram	
	

Pin configuration		
Electrical connection	M12x1, metal (5-pin)	
Supply +	1	
Supply -	3	
A (+)	2	
B (-)	4	
Reset	5	
Shield	plug housing	
Dimensions (mm / in)		
<div><div><b>standard</b></div><div><b>options</b><div><p>G1/4" DIN 3852</p><p>G1/4" EN 837</p></div><div><p>G1/2" DIN 3852 open port</p><p>1/2" NPT</p></div><div><p>G1/2" EN 837</p><p>1/4" NPT</p></div></div></div>		
⇒ metric threads and other versions on request		

Configuration Modbus RTU					
Standard configuration	001	-	1	-	1
Address					
Address	001				
	...				
	247				
Baud Rate					
4800 Bd			0		
9600 Bd			1		
19200 Bd			2		
38400 Bd			3		
Parity					
None					0
Odd					1
Even					2
Configuration code (to specify with order)					
		-		-	



## Ordering code DCT 561

DCT 561

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<sup>1</sup> metric threads and others on request

<sup>2</sup> possible for nominal pressure range  $p_N \leq 160$  bar

<sup>3</sup> PVDF only with G1/2" DIN 3852 open pressure port (up to 60 bar); permissible medium temperature: -25 ... 60 °C

<sup>4</sup> oxygen application with FKM-seal up to 25 bar



# DCT 562

## Industrial Pressure Transmitter with i²C interface

Ceramic Sensor

accuracy according to IEC 60770:  
0.5 % FSO

### Nominal pressure

from 0 ... 400 mbar up to 0 ... 600 bar

### Digital output signal

- i²C
- bus frequency max. 400 kHz
- configuration of data format
- interrupt signal

### Special characteristic

- ▶ pressure port G 1/2" open port PVDF for aggressive media

### Optional versions

- ▶ customer specific versions

Regardless of whether you need a pressure transmitter with i²C interface for an application in the laboratory area or in plant and mechanical engineering, the DCT 562 is adaptable for the detection of pressures and fill levels of pasty, contaminated Universal or aggressive media. Various mechanical and electrical connections are available.

The integrated i²C interface offers the user various options in the area of addressing and data acquisition, as well as simple control and use of the network for fast and slow bus users.

### Preferred areas of use are



Plant and machine engineering



Energy industry



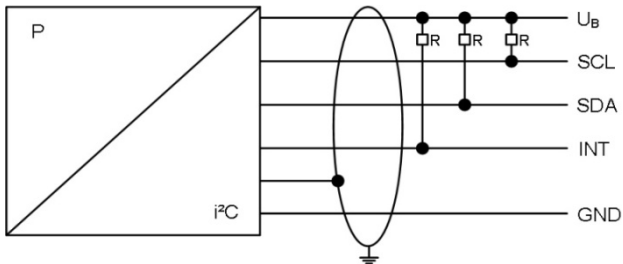
Laboratory applications



Input pressure range <sup>1</sup>																			
Nominal pressure gauge [bar]	-1...0	0.4	0.6	1	1.6	2.5	4	6	10	16	25	40	60	100	160	250	400	600	
Nominal pressure absolute [bar]	-	-	0.6	1	1.6	2.5	4	6	10	16	25	40	60	100	160	250	400	600	
Overpressure [bar]	4	1	2	2	4	4	10	10	20	40	40	100	100	200	400	400	600	800	
Burst pressure ≥ [bar]	7	2	4	4	5	7.5	12	18	30	50	75	120	180	300	500	750	1000	1100	
Permissible vacuum	p <sub>N</sub> ≥ 1 bar: unlimited vacuum resistance p <sub>N</sub> < 1 bar: on request																		
<sup>1</sup> PVDF pressure port possible for nominal pressure ranges up to 60 bar																			

Output signal / Supply	
i <sup>2</sup> C	V <sub>S</sub> = 3.5 ... 5.5 V <sub>DC</sub>
Performance	
Accuracy <sup>2</sup>	≤ ± 0.5 % FSO
Max. I/O current	10 mA
Long term stability	≤ ± 0.3 % FSO / year at reference conditions
Response time	1.5 msec + transmission time (depending on bus frequency)
Measuring rate	500 Hz
<sup>2</sup> accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)	
Thermal effects (offset and span)	
Thermal error	≤ ± 0.2 % FSO / 10 K
In compensated range	0 ... 85 °C
Permissible temperatures <sup>3</sup>	
Medium	-40 ... 125 °C
Electronics / environment	-40 ... 85 °C
Storage	-40 ... 100 °C
<sup>3</sup> for pressure port in PVDF the medium temperature is -30 ... 60 °C	
Electrical protection	
Short-circuit protection	permanent
Reverse polarity protection	by exchanged supply connections no damage, but also no function by exchanged communication with signal lines it can come according to constellation to damages.
Electromagnetic compatibility	emission and immunity according to EN 61326
Mechanical stability	
Vibration	10 g RMS (25 ... 2000 Hz) according to DIN EN 60068-2-6
Shock	500 g / 1 msec according to DIN EN 60068-2-27
Materials	
Pressure port	standard: stainless steel 1.4404 (316 L) optional for G1/2" DIN 3852 open port with nominal pressure range max. up to 60 bar: PVDF others on request
Housing	stainless steel 1.4404 (316 L)
Seals	standard: FKM option: EPDM (for $p_N \leq 160$ bar) others on request
Diaphragm	ceramic Al <sub>2</sub> O <sub>3</sub> 96 %
Media wetted parts	pressure port, seals, diaphragm
Miscellaneous	
Current consumption	< 15 mA
Weight	approx. 140 g
Ingress protection	IP 67
Installation position	any
Operational life	100 million load cycles
CE-conformity	EMC Directive: 2014/30/EU      Pressure Equipment Directive: 2014/68/EU (module A) <sup>4</sup>
<sup>4</sup> This directive is only valid for devices with maximum permissible overpressure > 200 bar	

### Wiring diagram

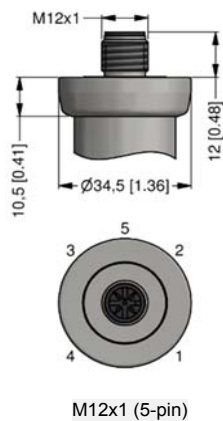


## Pin configuration

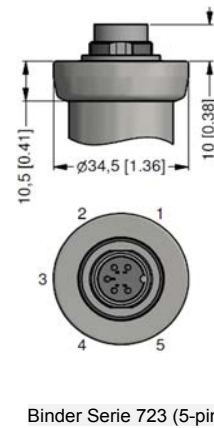
Electrical connection	M12x1 / metal (5-pin)	Binder 723 (5-pin)
Supply +	1	1
Supply –	3	3
SDA	2	2
SCL	4	4
INT	5	5
Shield	housing	housing

### Electrical connections (dimensions mm/in)

### Standard

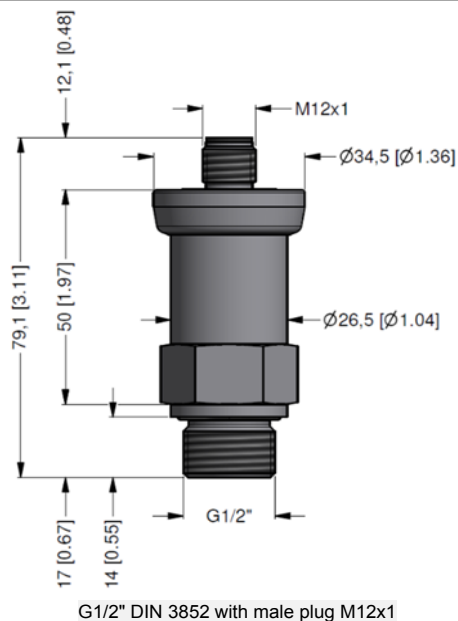


### Optional



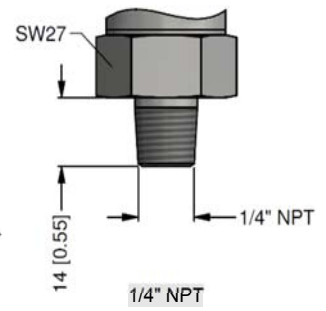
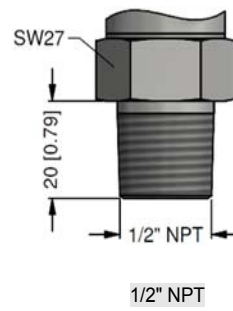
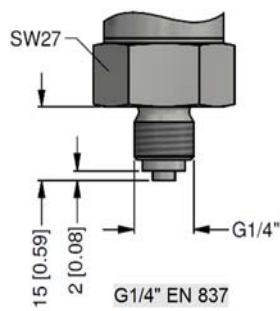
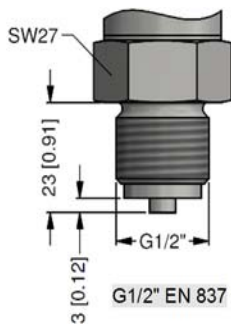
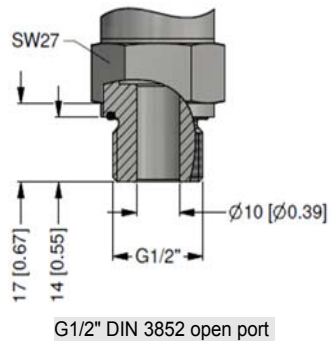
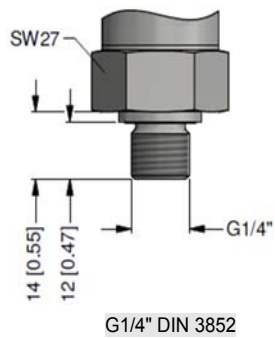
### Dimensions / mechanical connections (dimensions in mm)

**standard**



# Mechanical connections (dimensions mm/in)

option



⇒ metric threads and other versions on request

Configuration i <sup>2</sup> C-interface															
Stand configuration	0	5	0	-	0	-	0	-	0	-	0	-	0	0	1
Slave address															
address	0	0	1												
		...													
	1	2	7												
Type of result register															
32bit IEEE float					0										
16bit Integer					1										
Byte order of values															
Low byte first						0									
High byte first						1									
Mode of result register															
Value								0							
Percent of nominal								1							
Restore of address pointer															
No restore										0					
To last set address on next start										1					
Digital meaning															
Count of result											0	0	0	0	1
												...			
											1	0	0	0	0
Configuration code (has to be defined with the order)															
				-	-	-	-	-	-	-	-	-	-	-	-

## DCT 562

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<sup>3</sup> PVDF only with G1/2" DIN 3852 open pressure port (up to 60 bar); permissible medium temperature: -30 ... 60 °C



# DCT 563

## Industrial Pressure Transmitter with IO-Link Interface

Ceramic Sensor

accuracy according to IEC 60770:  
0.5 % FSO

### Nominal pressure

from 0 ... 600 mbar up to 0 ... 600 bar

### Digital output signal

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

### Special characteristic

- ▶ good thermal behaviour
- ▶ good long term stability

### Optional versions

- ▶ pressure port G 1/2" flush for pasty media (up to 25 bar)
- ▶ pressure port G 1/2" open port PVDF for aggressive media (up to 60 bar)
- ▶ oxygen application

IO-Link is a digital interface for sensors and actuators, which is worldwide standardized by IEC 61131-9. IO-Link does not have a bus topology, but it is a powerful point-to-point communication, where the device can be parameterized and the measured values transferred. The integration to the master is easy by using the IODD-file.

The sensor technology of the DCT 563 is the same as those of the proven pressure transmitter DMK 331, whereby the DCT 563 is suitable for pasty, polluted and aggressive media as well as for low-pressure oxygen applications.

The modular concept of the pressure transmitter allows customized electrical or mechanical connections, so it is easy to adapt the DCT 563 to different conditions on-site.

### Preferred areas of use are



Plant and machine engineering



Environmental engineering  
(water - sewage - recycling)



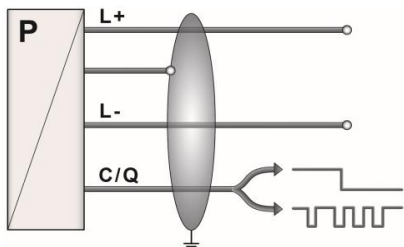
Medical technology



Input pressure range <sup>1</sup>										
Nominal pressure gauge	[bar]	-1...0 <sup>2</sup>	0.6	1	1.6	2.5	4	6	10	16
Nominal pressure abs.	[bar]	-	0.6	1	1.6	2.5	4	6	10	16
Overpressure	[bar]	3	2	3	5	5	12	12	20	50
Burst pressure ≥	[bar]	4	4	4	7	7.5	15	18	30	70
Nominal pressure gauge / abs.	[bar]	25	40	60	100	160	250	400	600	
Overpressure	[bar]	50	120	120	200	400	400	650	800	
Burst pressure ≥	[bar]	75	150	180	300	500	750	1000	1100	
Vacuum resistance	unlimited vacuum resistance									
<sup>1</sup> PVDF pressure port possible for nominal pressure ranges up to 60 bar										
<sup>2</sup> accuracy ≤ 1 % FSO										
Output signal / Supply										
Standard	IO-Link (measured value / status transmission) / V <sub>S</sub> = 18 ... 30 VDC SIO (switching output)									
IO-Link	V 1.1 / slave / smart sensor profile									
Data transfer	COM2 38.4 kbit/s									
Mode	SIO / IO-Link (COMx)									
Standard	IEC 61131-2, IEC 61131-9									
Performance										
Accuracy <sup>3</sup>	≤ ± 0.5 % 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 modus: approx. 20 msec									
Response time	SIO modus: < 4 msec									
Measuring rate	400 Hz									
<sup>3</sup> accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)										
Thermal effects (offset and span)										
Thermal error	≤ ± 0.3 % FSO / 10 K									
In compensated range	0 ... 85 °C									
Permissible temperatures <sup>4</sup>										
Medium	-25 ... 125 °C									
Electronics / environment	-25 ... 85 °C									
Storage	-40 ... 85 °C									
<sup>4</sup> for pressure port in PVDF the medium temperature is -25 ... 60 °C										
Electrical protection										
Short-circuit protection	permanent									
Reverse polarity protection	no damage, but also no function									
Electromagnetic compatibility	emission and immunity according to EN 61326									
Mechanical stability										
Vibration	10 g RMS (25 ... 2000 Hz) according to DIN EN 60068-2-6									
Shock	500 g / 1 msec according to DIN EN 60068-2-27									
Materials										
Pressure port	standard: stainless steel 1.4404 (316 L) optional for G1/2" open port with nominal pressure range up to 60 bar: PVDF others on request									
Housing	stainless steel 1.4404 (316L)									
Seals (media wetted)	standard: FKM options: EPDM (for p <sub>N</sub> ≤ 160 bar) others on request									
Diaphragm	ceramic Al <sub>2</sub> O <sub>3</sub> 96 %									
Media wetted parts	pressure port, seal, diaphragm									
Miscellaneous										
Option oxygen application	for p <sub>N</sub> ≤ 25 bar: O-ring in FKM Vi 567 (with BAM-approval); permissible maximum values are 25 bar / 150° C									
Current consumption	max. 15 mA									
Weight	approx. 140 g									
Installation position	any									
Protection class	IP 67									
Operational life	100 million load cycles									
CE-conformity	EMC Directive: 2014/30/EU Pressure Equipment Directive: 2014/68/EU (module A) <sup>5</sup>									
<sup>5</sup> This directive is only valid for devices with maximum permissible overpressure > 200 bar										

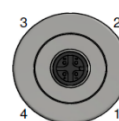


## Wiring diagram

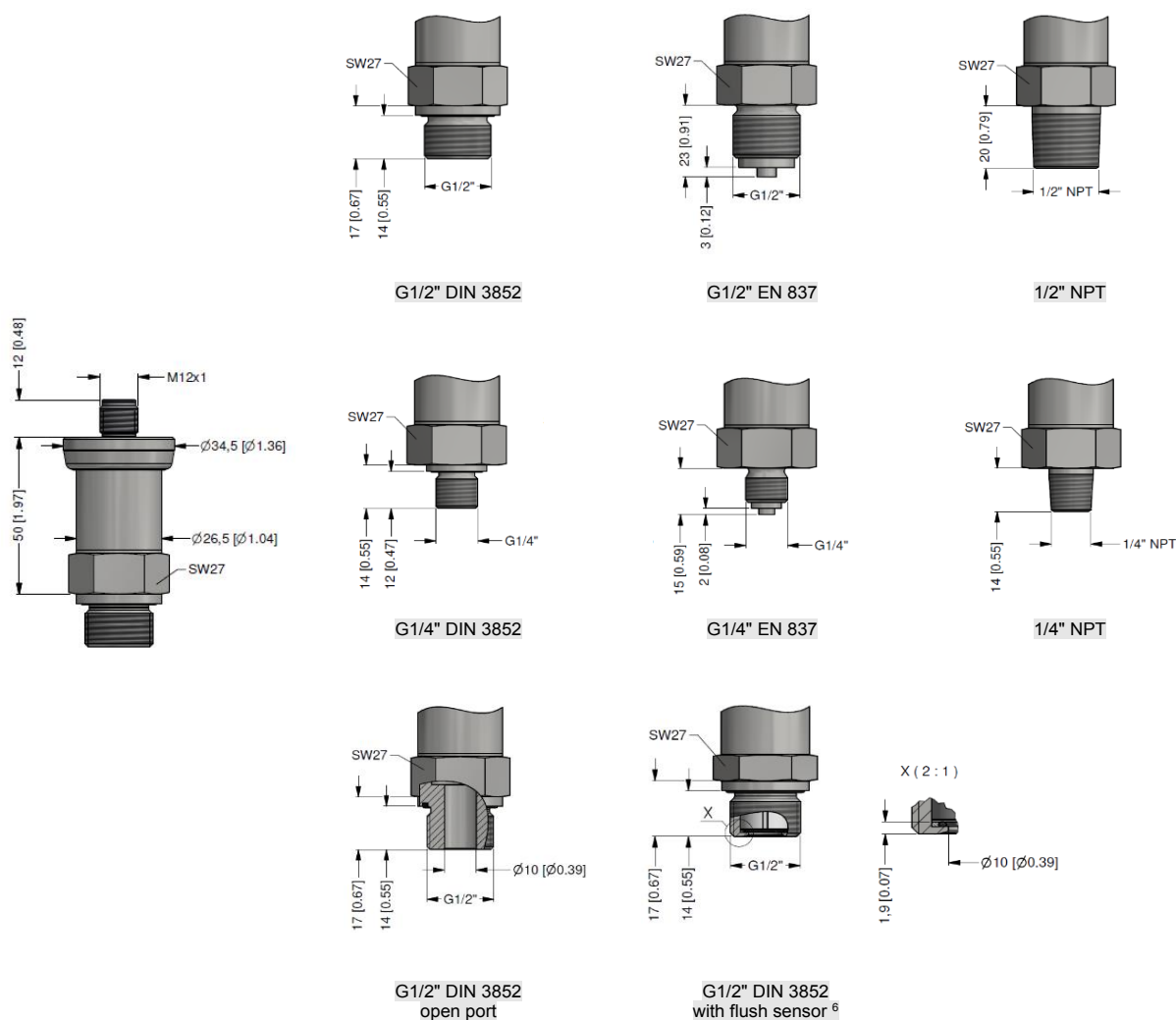


## Pin configuration

Electrical connection	M12x1 / metal (4-pin)
(L+) Supply +	1
(L-) Supply -	3
(C/Q) SIO / IO Link (COMx)	4
Shield	housing



## Dimensions (mm / in)



⇒ metric threads and other versions on request

<sup>6</sup> possible for nominal pressure ranges  $p_N \leq 25$  bar; absolute pressure ranges on request

Ordering code DCT 563

## DCT 563

			-					-		-		-				-				-		-		-				-			
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[illegible]

<sup>1</sup> metric threads and others on request

<sup>2</sup> possible for nominal pressure ranges  $p_N \leq 25$  bar; absolute pressure ranges on request

<sup>3</sup> possible for nominal pressure range  $p_N \leq 160$  bar

<sup>4</sup> PVDF only with G1/2" DIN 3852 open pressure port (up to 60 bar); permissible medium temperature: -25 ... 60 °C

<sup>5</sup> oxygen application with FKM-seal up to 25 bar



# DCT 571

## Industrial Pressure Transmitter with RS485 Modbus RTU

### Ceramic Sensor

accuracy according to IEC 60770:  
standard: 0.35 % FSO  
option: 0.25 % FSO

### Nominal pressure

from 0 ... 100 mbar up to 0 ... 60 bar

### Output signal

RS485 with Modbus RTU protocol

### Special characteristic

- ▶ diaphragm ceramics 99.9 %  $\text{Al}_2\text{O}_3$
- ▶ high long-term stability
- ▶ reset function

### Optional versions

- ▶ different kinds of inch threads
- ▶ pressure port in PVDF or PP-HT for aggressive media on request

The pressure transmitter DCT 571 was developed for applications in plant and mechanical engineering or in laboratory technology, e.g. designed to measure pressures or levels of pasty, contaminated or aggressive media.

The self-developed pressure sensor made of 99.9% pure ceramic is characterized by a high overload capacity, as well as temperature and media resistance.

The integrated RS 485 interface and the MODBUS RTU protocol used ensure reliable and robust data transmission, which also works smoothly over long distances.

### Preferred areas of use



Plant and machine engineering



Laboratory techniques



Water



Aggressive media

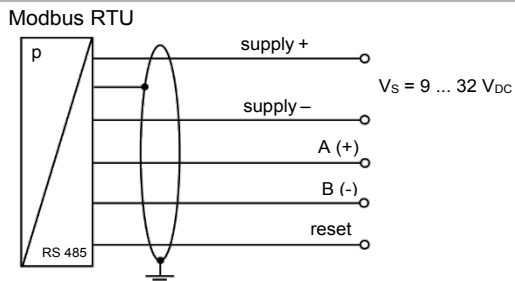


Modbus®

Input pressure range																
Nominal pressure gauge	[bar]	0.1	0.16	0.25	0.4	0.6	1	1.6	2.5	4	6	10	16	25	40	60
Level	[mH <sub>2</sub> O]	1	1.6	2.5	4	6	10	16	25	40	50	100	160	250	400	600
Overpressure	[bar]	3	4	5	5	5	7	7	12	12	20	20	20	40	70	70
Burst pressure ≥	[bar]	4	6	8	8	7	9	9	18	18	25	30	30	45	80	80
Permissible vacuum	[bar]	-0.2	-0.3	-0.5				-1 (unlimited vacuum resistance)								

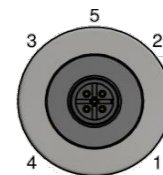
Output signal		
Digital (pressure)	RS485 with Modbus RTU protocol	
Supply		
Direct current (DC)	V <sub>S</sub> = 9 ... 32 V <sub>DC</sub>	
Performance		
Accuracy <sup>1</sup>	standard:	≤ ± 0.35 % FSO
	option:	≤ ± 0.25 % FSO
Long term stability	≤ ± 0,1 % FSO / year at reference conditions	
Measuring rate	500 Hz	
Delay time	500 msec	
<sup>1</sup> accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)		
Thermal effects (offset and span)		
Tolerance band	≤ ± 1 % FSO	
In compensated range	-20 ... 80 °C	
Permissible temperatures <sup>2</sup>		
Medium	-40 ... 125 °C	
Electronics / environment	-40 ... 85 °C	
Storage	-40 ... 85 °C	
<sup>2</sup> for pressure port in PVDF or PP-HT the operation medium temperature is -30 ... 60 °C		
Electrical protection		
Short-circuit protection	permanent	
Reverse polarity protection	no damage, but also no function	
Electromagnetic compatibility	emission and immunity according to EN 61326	
Mechanical stability		
Vibration	10 g RMS (25 ... 2000 Hz)	according to DIN EN 60068-2-6
Shock	100 g / 1 msec	according to DIN EN 60068-2-27
Materials		
Pressure port	standard:	stainless steel 1.4404 (316 L)
	option for G3/4" flush:	PVDF, PP-HT on request
	others on request	
Housing	stainless steel 1.4404 (316 L)	
	others on request	
Seals (O-rings)	standard:	FKM
	options:	EPDM
		FFKM
	others on request	
Diaphragm	ceramics Al <sub>2</sub> O <sub>3</sub> 99.9 %	
	others on request	
Media wetted parts	pressure port, seals, diaphragm	
Miscellaneous		
Ingress protection	IP 67	
Installation position	any	
Current consumption	max. 10 mA	
Weight	approx. 180 g	
Operational life	100 million load cycles	
CE-conformity	EMC Directive: 2014/30/EU	

# Wiring diagram



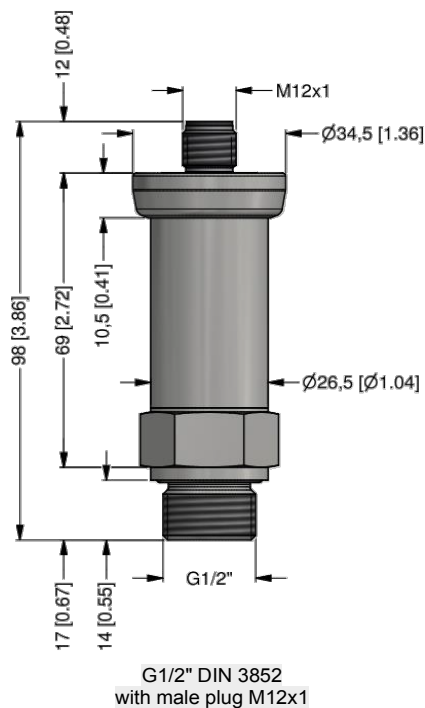
## Pin configuration / electrical connection

Electrical connection	M12x1, metal (5-pin)
Supply +	1
Supply -	3
A (+)	2
B (-)	4
Reset	5
Shield	plug housing

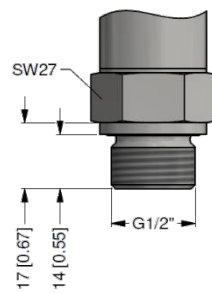


## Dimensions / mechanical connection (mm / in)

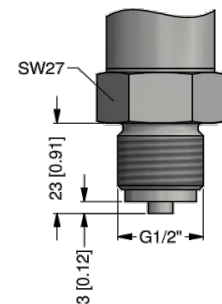
### standard



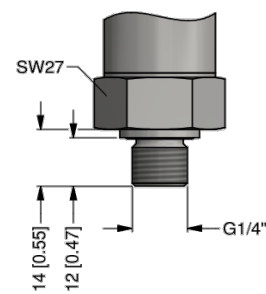
### options



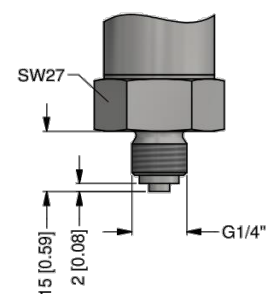
G1/2" DIN 3852



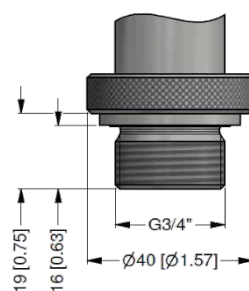
G1/2" EN 837



G1/4" DIN 3852



G1/4" EN 837



G3/4" DIN 3852 flush

⇒ metric threads and other versions on request

Configuration Modbus RTU					
Standard configuration	001	-	1	-	1
Address					
Address	001				
	...				
	247				
Baud Rate					
4800 Bd			0		
9600 Bd			1		
19200 Bd			2		
38400 Bd			3		
Parity					
None					0
Odd					1
Even					2
Configuration code (to specify with order)					
		-		-	

Ordering code DCT 571

DCT 571

			-				-			-		-			-			-			-			-				-			
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[illegible]

<sup>1</sup> metric threads and others on request

<sup>2</sup> only for mechanical connection G3/4"; for pressure port in PVDF or PP-HT the operation medium temperature is -30 ... 60 °C





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## COMPETENCE

**Industrial pressure measurement technology  
from 0.1 mbar up to 6000 bar**

- > **pressure transmitters, electronic pressure switches or hydrostatic level probes**
- > **OEM or high-end products**
- > **standard products or customized solutions**

BD|SENSORS has the right pressure measuring device at the right price.

## PRICE / PERFORMANCE

**pressure measurement at the highest level**

The concentration on electronic pressure transmitter has led to extraordinary efficiency and economical pricing.

BD|SENSORS is certain to be one of the most economical suppliers on the world market, given equal technical and commercial conditions.

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**projectable delivery times and strict  
observance of deadlines**

Short delivery times and firm deadlines, even for special designs, make BD|SENSORS a reliable partner for our customers.

BD|SENSORS reduces the level of your stock-keeping and increases your profitability.

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We solve your problem in industrial pressure measurement quickly and economically, not only with large-scale production lines, but also for smaller requirements.

BD|SENSORS is especially flexible when technical support and quick assistance are required in service case as well as for rush orders.

## INDUSTRIES



plant and machine engineering



chemical and biochemical industry



energy industry



renewable energy



semiconductor industry /  
cleanroom technology



HVAC



hydraulics



refrigeration



calibration techniques



laboratory techniques



medical technology



food and beverage



vehicles and mobile hydraulics



oil and gas industry



pharmaceutical industry



marine / shipbuilding / offshore



heavy industry



environmental industry



packaging and paper industry

## MEDIA



sewage



aggressive media



colours



gases



fuels and oils



pasty and viscous media



oxygen



water



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