DCT 531



Industrial Pressure Transmitter with RS485 Modbus RTU

Stainless Steel Sensor

accuracy according to IEC 61298-2:
0.25 % 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
- drinking water certificate
  according to DVGW and KTW

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

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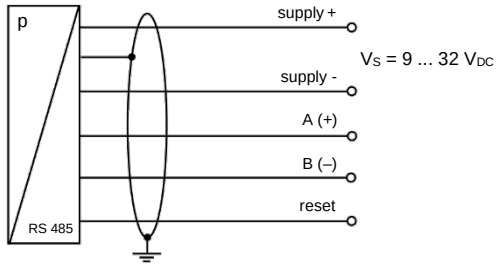
Input pressure range												
Nominal pressure gauge	[bar]	-1…0	0.10	0.16	0.25	0.40	0.60	1	1.6	2.5	4	6
Nominal pressure absolute	[bar]	-	-	-	-	0.40	0.60	1	1.6	2.5	4	6
Overpressure	[bar]	5	0.5	1	1	2	5	5	10	10	20	40
Burst pressure ≥	[bar]	7.5	1.5	1.5	1.5	3	7.5	7.5	15	15	25	50

Nominal pressure gauge / absolute	[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_N ≥ 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 … 32 V_{DC}
Performance	
Accuracy [1]	≤ ± 0.25 % FSO
Long term stability	≤ ± 0.1 % FSO / year at reference conditions
Measuring rate	500 Hz
Delay time	500 msec
[1] accuracy according to IEC 61298-2 – limit point adjustment (non-linearity, hysteresis, repeatability)	
Thermal effects (offset and span)	
Tolerance band	≤ ± 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	20 g RMS / 10 ... 2000 Hz according to DIN EN 60068-2-6
Shock	500 g / 1 msec half sine according to DIN EN 60068-2-27
Materials	
Pressure port / housing	stainless steel 1.4404 (316 L)
Seals	standard: FKM option: EPDM (without / with drinking water approval); welded version [2] (for p_N ≤ 40 bar)
Diaphragm	stainless steel 1.4435 (316 L)
Media wetted parts	pressure port, seal, diaphragm
[2] welded version only with pressure ports according to EN 837 and NPT, p_N ≤ 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 [3]
CE-conformity	EMC Directive: 2014/30/EU Pressure Equipment Directive: 2014/68/EU (module A) [4]
Drinking water certificate [5]	according to DVGW W 270 and UBA KTW (with order the indication "with drinking water certificate" is necessary)

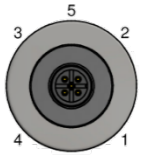
[3] Pressure transmitters are calibrated in a vertical position with the pressure connection down. If this position is changed on installation there can be slight deviations in the zero point for pressure ranges p_N ≤ 1 bar.
[4] This directive is only valid for devices with maximum permissible overpressure > 200 bar
[5] only possible with EPDM seal

Wiring diagram



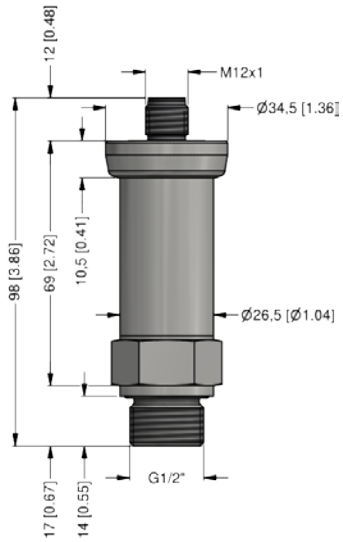
Pin configuration / electrical connection

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



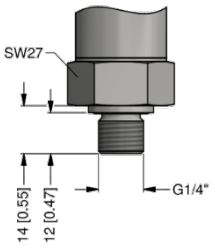
Dimensions (mm / in)

standard

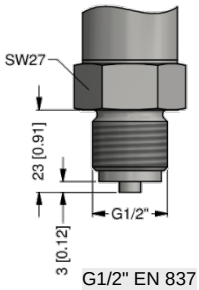


G1/2" DIN 3852
with M12x1

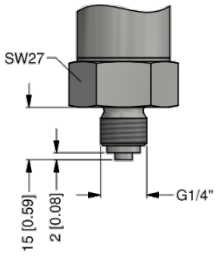
options



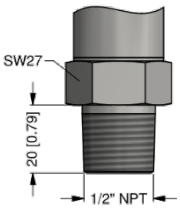
G1/4" DIN 3852



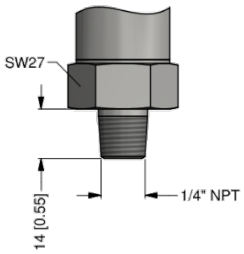
G1/2" EN 837



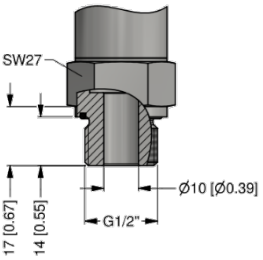
G1/4" EN 837



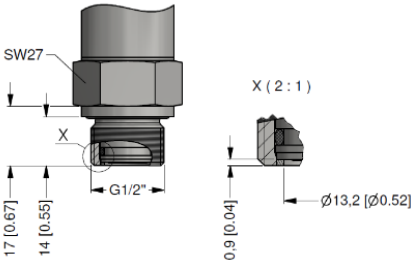
1/2" NPT



1/4" NPT



G1/2" DIN 3852
open port (p_N ≤ 40 bar)



G1/2" DIN 3852 with
semi-flush sensor (p_N ≤ 40 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)		-		-	

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BD|SENSORS pressure measurement

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pressure measurement

Ordering code DCT 531

DCT 531 □□□-□□□□-□□-□-□□□-□□□-□-□□□

Pressure																									
gauge		D	C	7																					
absolute	[1]	D	C	8																					
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																									
RS485 Modbus RTU									L	5															
Accuracy																									
0.25 % FSO											2														
customer											9														consult
Electrical connection																									
male plug M12x1 (5-pin) / metal												N	1	1											
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 with semi-flush sensor	[2]														F	0	0								
G1/2" DIN 3852 open pressure port	[2]														H	0	0								
1/2" NPT															N	0	0								
1/4" NPT															N	4	0								
customer															9	9	9								consult
Seal																									
FKM																		1							
EPDM																		3							
DVGW/KTW: EPDM	[3]																	3T							
without (welded version)	[4]																	2							consult
customer																		9							consult
Special version																									
standard																			0	0	0				
customer																			9	9	9				consult

[1] absolute pressure possible from 0.4 bar

[2] not possible for nominal pressure p_N > 40 bar

[3] drinking water certification only possible with EPDM seal (code 3T)

[4] welded version only with pressure ports according to EN 837 and NPT, possible for $p_N \leq 40$ bar

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