BD SENSORS
pressure measurement

DCT 541

Industrial Pressure Transmitter with RS485 Modbus RTU

Welded, Dry
Stainless Steel Sensor

accuracy according to IEC 60770:
0.5 % FSO

Nominal pressure

from 0 ... 16 bar up to 0 ... 1000 bar

Output signal

RS485 with Modbus RTU protocol

Special characteristics

- media wetted parts of special stainless steel
- insensitive to pressure peaks
- high overpressure capability
- oil and grease free according to ISO 15001 (e.g. for oxygen applications)

Optional version

- customer specific versions

The industrial pressure transmitter DCT 541 was especially developed for hydrogen applications and can also be used with other technical gases (e.g. oxygen) and 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 requested by a master.
For hydrogen applications, it is important to use a material that minimizes or prevents hydrogen embrittlement due to its chemical properties.

For oxygen applications, the special cleaning and manufacturing process ensures that residual particles and hydrocarbons are minimized and no reaction can occur during production.

Preferred areas of use are

- Technical gases
- Hydrogen
- Fuel cell
- Medical technology

Modbus® CE ROHS REACH cULus LISTED

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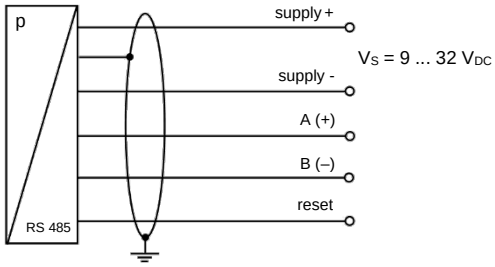
Input pressure range											
Nominal pressure gauge	[bar]	16	25	40	60	100	160	250	400	600	1000
Overpressure	[bar]	50	50	80	120	200	320	500	800	1200	1500
Burst pressure ≥	[bar]	125	125	200	300	500	800	1250	2000	2000	3000 [1]
Vacuum resistance		unlimited									
[1] UL confirmed max. burst pressure 2420 bar											

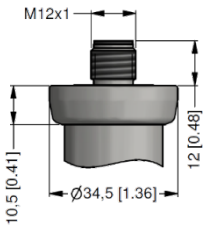
Output signal	
Digital	RS 485 with Modbus RTU protocol (pressure)
Supply	
Direct current	V_S = 9 … 32 V_{DC}
Performance	
Accuracy [2]	≤ ± 0.5 % FSO
Long term stability	≤ ± 0.1 % FSO / year at reference conditions
Measuring rate	500 Hz
Delay time	500 msec
[2] accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)	
Thermal effects (offset and span)	
Thermal error	± 0.2 % FSO / 10 K
in compensated range	-20 … 80 °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	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	
Housing	stainless steel 316L (1.4404)
Pressure port, sensor, diaphragm	stainless steel 316L (1.4435)
Seals	none (welded)
Media wetted parts	pressure port, sensor, diaphragm
Miscellaneous	
Current consumption	max. 10 mA
Weight	approx. 140 g
Installation position	any
Operational life	p_N ≤ 600 bar: 100 million load cycles p_N > 600 bar: 10 million load cycles
CE-conformity	EMC Directive: 2014/30/EU Pressure Equipment Directive: 2014/68/EU (module A) [3]
[3] This directive is only valid for devices with maximum permissible overpressure > 200 bar.	
Purity regarding residual particles / greases	
Oil and grease free version	residual particles: no particles > 100 µm (based on 10 dm²) residual greases: residual grease content < 0.2 mg/dm²

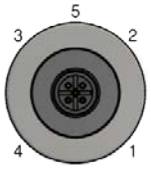
Wiring diagram



Pin configuration / electrical connection

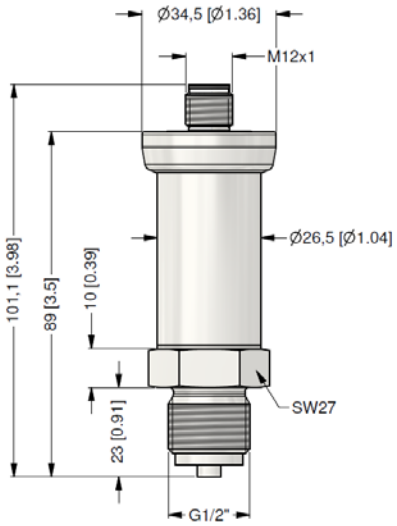
Electrical connections	M12x1 / metal (5-pin)
Supply +	1
Supply –	3
A (+)	2
B (–)	4
Reset	5
Shield	plug housing





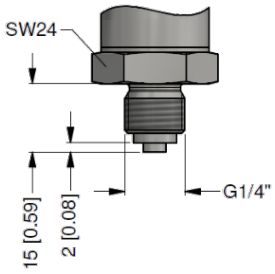
Mechanical connections (dimensions mm / in)

standard

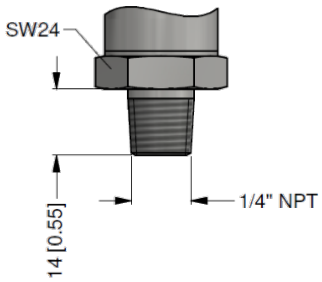


G1/2" EN 837

options



G1/4" EN 837
p_N ≤ 600 bar



1/4" NPT

⇨ **metric threads and different versions on demand**

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BD|SENSORS pressure measurement

Ordering code DCT 541

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Pressure																							
	gauge	2	1	5																			
Input	**[bar]**																						
	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															
	600				6	0	0	3															
	1000				1	0	0	4															
	customer				9	9	9	9															consult
Output																							
	RS485 Modbus RTU								L	5													
Accuracy																							
	0.5 % FSO										5												
Electrical connection																							
	male plug M12x1 (4-pin) / metal											N	1	1									
	customer											9	9	9									consult
Mechanical connection																							
	G1/2" EN 837														2	0	0						
$p_N \leq 600$ bar	G1/4" EN 837														4	0	0						
	1/4" NPT														N	4	0						
	customer														9	9	9						consult
Seal																							
	without (welded version)																	2					
	customer																	9					consult
Special version																							
	oil-and grease free -oxygen																		0	0	7		
	customer																		9	9	9		consult

26.08.2024

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