



DCT 531i

Precision Pressure Transmitter with RS485 Modbus RTU

Stainless Steel Sensor

accuracy according to IEC 61298-2:
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®

DCT 531i

Precision Pressure Transmitter with RS485 Modbus RTU

Technical Data

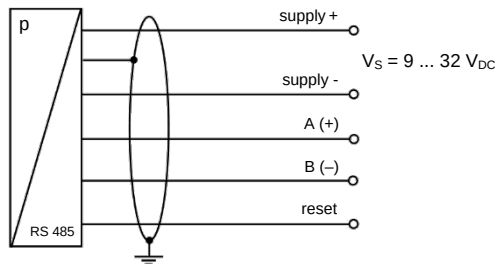
Input pressure range												
Nominal pressure gauge	[bar]	-1...0	0.10	0.16	0.25	0.40	0.60	1	1.6	2.5	4	6
Nominal pressure absolute	[bar]	-	-	-	-	0.40	0.60	1	1.6	2.5	4	6
Overpressure	[bar]	5	0.5	1	1	2	5	5	10	10	20	40
Burst pressure ≥	[bar]	7.5	1.5	1.5	1.5	3	7.5	7.5	15	15	25	50
Nominal pressure gauge/abs.	[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 _N ≥ 1 bar: unlimited vacuum resistance					p _N < 1 bar: on request						
Output signal												
Digital	RS485 with Modbus RTU protocol (pressure & temperature)											
Supply												
Direct voltage	V _S = 9 ... 32 V _{DC}											
Performance												
Accuracy ¹	nominal pressure ≥ 0.25 bar: ≤ ± 0.10 % FSO nominal pressure < 0.25 bar: ≤ ± 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)												
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	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 ² (welded version) others on request											
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											
Current consumption	max. 10 mA											
Ingress protection	IP 67											
Installation position	any ³											
Operational life	100 million load cycles											
CE-conformity	EMC Directive: 2014/30/EU Pressure Equipment Directive: 2014/68/EU (module A) ⁴											
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.												

DCT 531i

Precision Pressure Transmitter with RS485 Modbus RTU

Technical Data

Wiring diagram

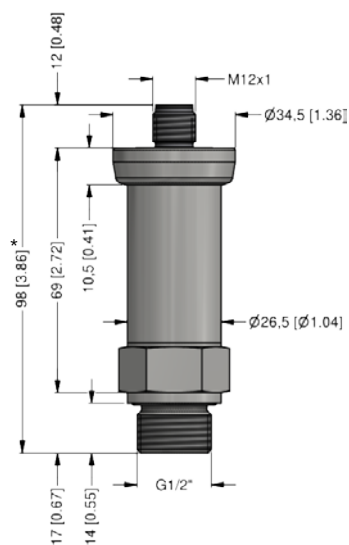


Pin configuration / electrical connection

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

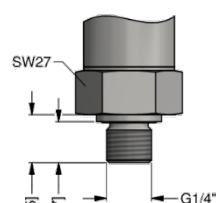
Dimensions (mm / in)

standard

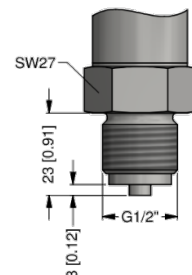


G1/2" DIN 3852
with M12x1

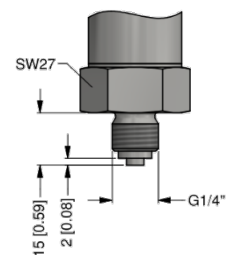
options



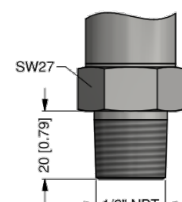
G1/4" DIN 3852



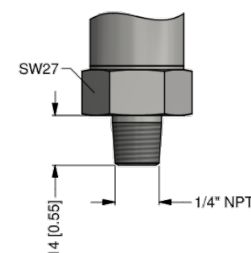
G1/2" EN 837



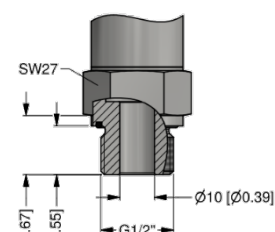
G1/4" EN 837



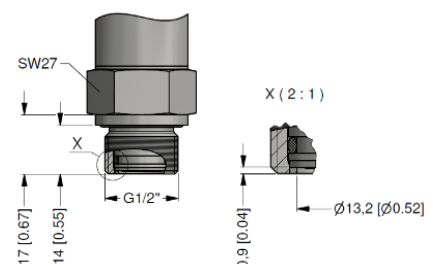
G1/2" NPT



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

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Technical Data

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

Ordering code DCT 531i

DCT 531i

□	□	□	-	□	□	□	□	-	□	□	-	□	-	□	□	□	□
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Pressure					
	gauge	D	C	7	
	absolute	D	C	8	
Input					
	[bar]				
	0.10 ¹		1	0	0
	0.16 ¹		1	6	0
	0.25 ¹		2	5	0
	0.40		4	0	0
	0.60		6	0	0
	1.0		1	0	0
	1.6		1	6	0
	2.5		2	5	0
	4.0		4	0	0
	6.0		6	0	0
	10		1	0	0
	16		1	6	0
	25		2	5	0
	40		4	0	0
	60		6	0	0
	100		1	0	0
	160		1	6	0
	250		2	5	0
	400		4	0	0
	-1 ... 0	X	1	0	2
	customer		9	9	9
Output					
	RS485 Modbus RTU	L	5		
Accuracy					
standard for p _N ≥ 0.25 bar:	0.10 % FSO			1	
standard for p _N < 0.25 bar:	0.25 % FSO			2	
	customer			9	
Electrical connection					
	male plug M12x1 (5-pin) / metal			N	1 1
	customer			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 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
Seal					
	FKM			1	
	EPDM			3	
	without (welded version) ³			2	
	customer			9	
Special version					
	standard			1	1 1
	customer			9	9 9

¹ absolute pressure possible from 0.4 bar

² not possible for nominal pressure $p_N > 40$ bar

³ welded version only with pressure ports according to EN 837 and NPT, possible for $p_N \leq 40$ bar