

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



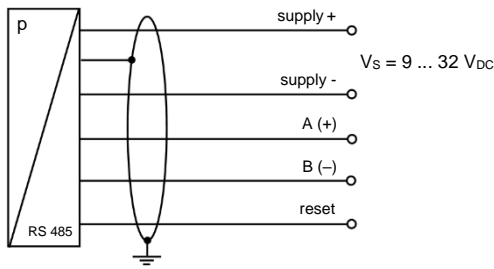
Input pressure range												
Nominal pressure gauge	[bar]	-1...0	0.10	0.16	0.25	0.40	0.60	1	1.6	2.5	4	6
Nominal pressure absolute	[bar]	-	-	-	-	0.40	0.60	1	1.6	2.5	4	6
Overpressure	[bar]	5	0.5	1	1	2	5	5	10	10	20	40
Burst pressure \geq	[bar]	7.5	1.5	1.5	1.5	3	7.5	7.5	15	15	25	50
Nominal pressure gauge/abs.	[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												
Digital		RS485 with Modbus RTU protocol (pressure & temperature)										
Supply												
Direct voltage		$V_S = 9 \dots 32 V_{DC}$										
Performance												
Accuracy ¹		nominal pressure ≥ 0.25 bar: $\leq \pm 0.10$ % FSO nominal pressure < 0.25 bar: $\leq \pm 0.25$ % FSO										
Long term stability		$\leq \pm 0.1$ % FSO / year at reference conditions										
Measuring rate		500 Hz										
Delay time		500 msec										
¹ accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)												
Thermal effects (offset and span)												
Thermal error		$\leq \pm 0.02$ % 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 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, $p_N \leq 40$ 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 $p_N \leq 1$ bar.												
⁴ This directive is only valid for devices with maximum permissible overpressure > 200 bar.												

DCT 531i

Precision Pressure Transmitter with RS485 Modbus RTU

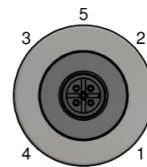
Technical Data

Wiring diagram



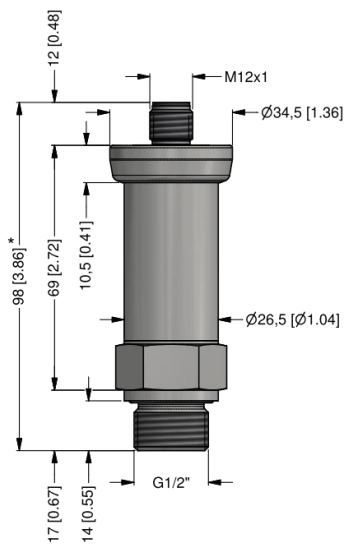
Pin configuration / electrical connection

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



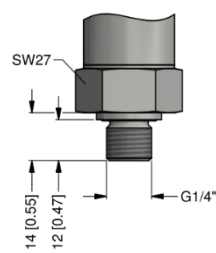
Dimensions (mm / in)

standard

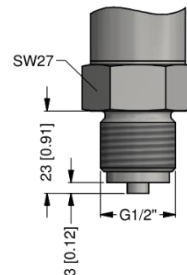


G1/2" DIN 3852
with M12x1

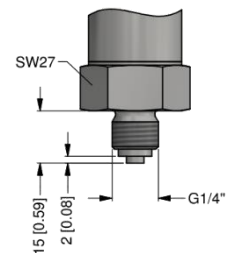
options



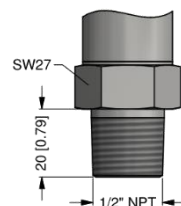
G1/4" DIN 3852



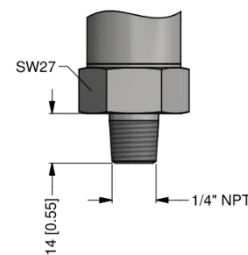
G1/2" EN 837



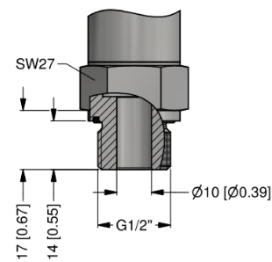
G1/4" EN 837



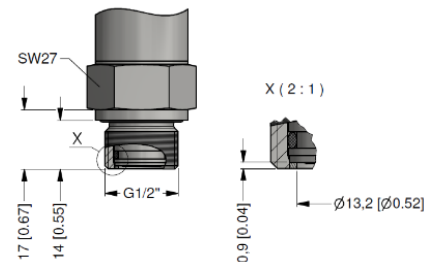
G1/2" NPT



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

DCT 531i

Precision Pressure Transmitter with RS485 Modbus RTU

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									
	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																	
	standard for $p_N \geq 0.25$ bar:	0.10 % FSO								1							
	standard for $p_N < 0.25$ bar:	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								F	0	0						
	with semi-flush sensor ²																
	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					
	without (welded version) ³											2			consult		
	customer											9			consult		
Special version																	
	standard											1	1	1			
	customer											9	9	9			consult

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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