

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®

DCT 531

Industrial Pressure Transmitter with RS485 Modbus RTU

Technical Data

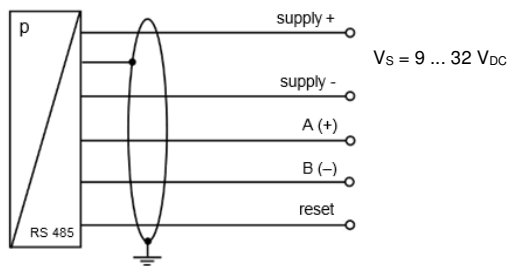
Input pressure range												
Nominal pressure gauge	[bar]	-1...0	0.10	0.16	0.25	0.40	0.60	1	1.6	2.5	4	6
Nominal pressure absolute	[bar]	-	-	-	-	0.40	0.60	1	1.6	2.5	4	6
Overpressure	[bar]	5	0.5	1	1	2	5	5	10	10	20	40
Burst pressure \geq	[bar]	7.5	1.5	1.5	1.5	3	7.5	7.5	15	15	25	50
Nominal pressure gauge / 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 ¹										
		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										
¹ accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)												
Thermal effects (Offset and Span)		Tolerance band [% FSO]										
		$\leq \pm 0.75$										
		In compensated range [°C]										
		-20 ... 85										
Permissible temperatures		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 ² (for $p_N \leq 40$ bar) 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, $p_N \leq 40$ bar												
Miscellaneous		Weight										
		approx. 210 g										
		Ingress protection										
		IP67										
		Current consumption										
		typ. 7 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										
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 531

Industrial Pressure Transmitter with RS485 Modbus RTU

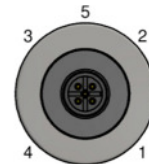
Technical Data

Wiring diagram



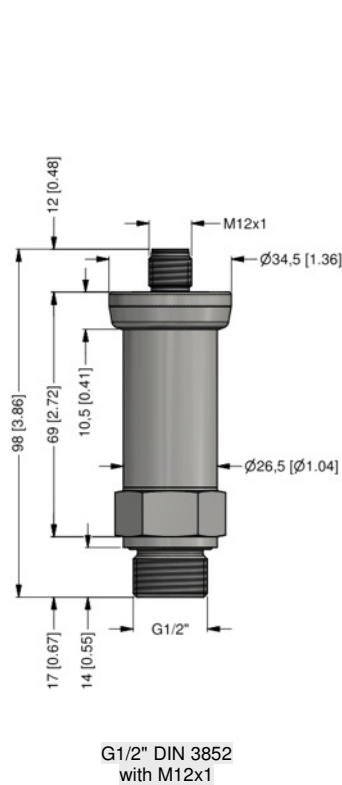
Pin configuration / electrical connection

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

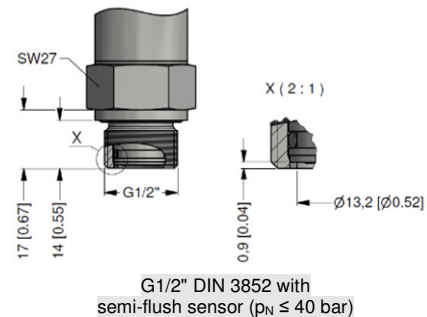
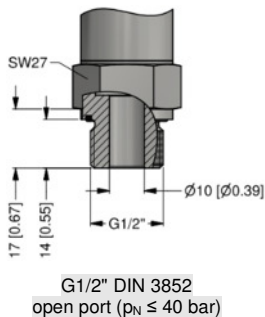
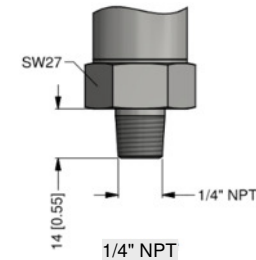
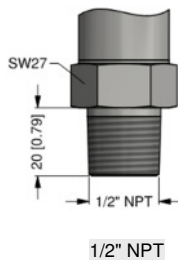
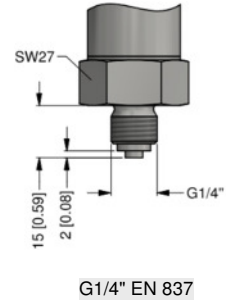
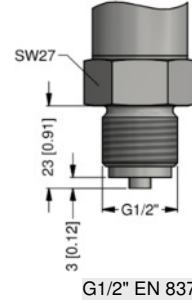
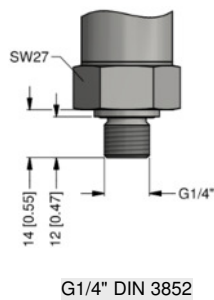


Dimensions (mm / in)

standard



option



⇒ metric threads and other versions on request

DCT 531

Industrial 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)					
		-		-	

© 2020 BD|SENSORS GmbH – The specifications given in this document represent the state of engineering at the time of publishing. We reserve the right to make modifications to the specifications and materials.

DCT531_E_130320

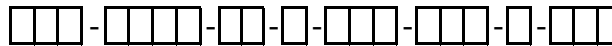
Tel.: +49 (0) 92 35 / 98 11- 0
Fax: +49 (0) 92 35 / 98 11- 11

www.bdsensors.de
info@bdsensors.de

BD|SENSORS
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									
standard:	0.25 % FSO				2				
option:	0.10 % FSO				1				consult
	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
Seals									
	FKM							1	
	EPDM							3	
	without (welded version) ³							2	consult
	customer							9	consult
Special version									
	standard							0	0
	customer							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, possible for $p_N \leq 40$ bar