

DPT 100



Differential Pressure Transmitter for Process Industry

accuracy according to IEC 60770:
0.1 % FSO

Differential pressure

from 10 mbar up to 20 bar

Static pressure

max. 400 bar

Output signal

2-wire: 4 ... 20 mA

RS485 with Modbus RTU protocol

Special characteristics

- ▶ compact design
- ▶ fast response time
- ▶ aluminium die cast case
- ▶ zero adjustment via button

Optional versions

- ▶ several process connections

The differential pressure transmitter DPT 100 has been especially designed for fast test processes in leakage and flow measurement, where a fast response time and high sampling rate are necessary.

The compact design of the DPT 100 facilitates the usage in standardised applications. For instance, the installation in 19" racks.

The DPT 100 with optionally 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 – the data will transfer in binary form.

Preferred areas of use are

Test engineering / leak testing



Machine and plant engineering



Environmental technology



Energy production



Modbus®

DPT 100

Differential Pressure Transmitter

Technical Data

Differential pressure ranges							
Pressure range P_N diff.	10 mbar	60 mbar	100 mbar	400 mbar	2.5 bar	20 bar	
Pressure range P_N symmetric (diff.)	± 10 mbar	± 60 mbar	± 100 mbar	± 400 mbar	on request	on request	
Permissible static pressure	70 bar	400 bar	400 bar	400 bar	400 bar	400 bar	
Output signal / Supply							
Standard	2 wire : 4 ... 20 mA / $V_S = 12 \dots 32 V_{DC}$						
Option	digital: RS 485 with Modbus RTU protocol / $V_S = 9 \dots 32 V_{DC}$ (delay time: 500 msec)						
Performance							
Accuracy ¹	$P_N \geq 60$ mbar: $\leq \pm 0.1$ % FSO $P_N < 60$ mbar: $\leq \pm 0.2$ % FSO						
Permissible load	$R_{max} = [(V_S - V_{Smin}) / 0.02 A] \Omega$						
Influence supply	supply: 0.05 % FSO / 10 V load: 0.05 % FSO / k Ω						
Influence static pressure P_N [Pa/100 bar]	10 mbar 18	60 mbar 30	400 mbar 40	2.5 bar 250	20 bar 2000		
Influence installation position	max. 400 Pa (can be compensated by zero-point correction) for ranges < 60 mbar please state installation position on the order						
Long term stability	$P_N \geq 60$ mbar: $\leq \pm 0.05$ %FSO/ year at reference conditions $P_N < 60$ mbar: $\leq \pm 0.15$ %FSO/ year at reference conditions						
Sampling rate	250 Hz						
Turn-on time	approx. 260 msec						
Response time (10 ... 90 %)	10 msec						
¹ accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)							
Thermal effects (Offset and Span)							
Thermal error (offset and span)	$\leq \pm 0.1$ % FSO / 10 K						
Compensated range	-20 ... 80 °C						
Permissible temperatures	medium: -25 ... 85°C		electronics / environment: -25 ... 85°C		storage: -25 ... 85°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							
One-sided overload	according to the maximum static pressure of differential pressure sensor						
Vibration	5 g RMS (25 ... 2000 Hz)			according to DIN EN 60068-2-6			
Shock	100 g / 1 msec			according to DIN EN 60068-2-27			
Materials							
Pressure port / flange	standard	stainless steel 304 / 1.4301				others: on request	
	option	stainless steel 316 / 1.4401					
Diaphragm	stainless steel 316L / 1.4404				others: on request		
Vent and dump valves	stainless steel 304 / 1.4301						
Blanking plugs	standard	stainless steel 304 / 1.4301				others: on request	
	option	stainless steel 316 / 1.4401					
Bolts and nuts	standard	stainless steel 304 / 1.4301				others: on request	
	option	stainless steel 316 / 1.4401					
Housing	aluminium die cast with epoxy painting (grey)				others: on request		
Cable gland	polyamide						
Seals (media wetted)	standard	FKM				others: on request	
	option	EPDM, NBR					
Filling fluids	silicone oil				others: on request		
Media wetted parts	pressure port, seal of pressure port, diaphragm						

DPT 100

Differential Pressure Transmitter

Technical Data

Miscellaneous		
Mounting bracket (optionally)	material C-steel or stainless steel 304 / 1.4401 weight 0.45 kg (incl. bolts and nuts)	
Ingress protection	IP 66 / IP 67	
Installation position	any ²	
Weight	approx. 1800 g	
Current consumption	approx. 23 mA	
Operational life	100 million load cycles	
CE-conformity	EMC Directive: 2014/30/EU Pressure Equipment Directive: 2014/68/EU (module A) ³	
² 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. Press the button for zero adjustment (see operating manual).		
³ This directive is only valid for devices with maximum permissible overpressure > 200 bar.		
Connections		
Electrical connection	terminal clamps in clamping chamber (for cable-Ø max.2.5 mm ²)	
Process connections	internal thread 1/4" - 18 NPT / fixing 7/16 UNF internal thread 1/4" - 18 NPT / fixing M10 others: on request	
Standard option		
Wiring diagram		
2-wire-system (current)	RS485 / Modbus RTU	
Pin configuration		
Electrical connection	terminal clamps	M12x1 / metal (4-pin)
Supply +	+ Ub	1
Supply -	- Ub	3
for RS485 / Modbus RTU:		
A (+)	A	2
B (-)	B	4
Ground		plug housing
Dimensions (mm / in)		

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BD|SENSORS
pressure measurement

Ordering code DPT 100

DPT 100



Pressure																		
	differential pressure	3	4	5														
Input																		
	10 mbar	0	1	0	0													
	60 mbar	0	6	0	0													
	100 mbar	1	0	0	0													
	400 mbar	4	0	0	0													
	2.5 bar	2	5	0	1													
	20 bar	2	0	0	2													
	-10 ... 10 mbar	S	0	1	0													
	-60 ... 60 mbar	S	0	6	0													
	-100 ... 100 mbar	S	1	0	0													
	-400 ... 400 mbar	S	4	0	0													
	customer	9	9	9	9													consult
Output																		
	4 ... 20 mA / 2-wire					1												
	RS485 Modbus RTU					L5												
	customer					9												consult
Accuracy																		
	P _N ≥ 60 mbar:	0.1 %	FSO			1												
	P _N < 60 mbar:	0.2 %	FSO			B												
	customer					9												consult
Housing																		
	aluminium					L												
	customer					9												consult
Electrical connection																		
	terminals / cable gland M12x1.5						A	K	2									
	male plug M12x1 (4-pin) / metal						M	1	7									
	customer						9	9	9									consult
Process connection																		
	1/4" - 18 NPT F / fixing 7/16 UNF						N	2	0									
	1/4" - 18 NPT (F / vertical) / fixing 7/16 UNF						N	2	1									
	1/4" - 18 NPT F / fixing M10						N	3	0									
	1/4" - 18 NPT (F / vertical) / fixing M10						N	3	1									
	customer						9	9	9									consult
Valve																		
	without									0								
	with vent									1								
	with vent (top)									2								
	with vent (bottom)									3								
Material flange, valves, screws, ...																		
	stainless steel 1.4301 (304 SS)									0	2							
	stainless steel 1.4401 (316 SS)									1	2							
	customer									9	9							consult
Diaphragm / filling fluid																		
	stainless steel 1.4435 (316L) / silicone oil									1	1							
	customer									9	9							consult
Seal																		
	FKM											1						
	EPDM											3						
	NBR											5						
	PTFE											4						
	customer											9						consult
Special version																		
	standard												0	0	0			
	customer												9	9	9			consult

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