



# DPT 200

## Differential Pressure Transmitter for Process Industry with HART®-Communication

accuracy according to IEC 60770:  
0.075 % FSO

### Differential pressure

from 1 mbar up to 20 bar

### Static pressure

max. 400 bar

### Output signal

2-wire: 4 ... 20 mA

### Special characteristics

- ▶ static over pressure 400 bar
- ▶ rangeability max. 100:1
- ▶ aluminium die cast case
- ▶ HART®-communication
- ▶ output signal: linear or square root extraction






### Optional versions

- ▶ Ex-version group I
  - Ex ia = intrinsically safe version for firedamp mines
- ▶ Ex-version group II
  - Ex ia = intrinsically safe version
  - Ex d = flameproof enclosure
- ▶ LC display
- ▶ stainless steel housing

The differential pressure transmitter DPT 200 has been especially designed for the process industry and can be used for level measurement of closed, pressurized tanks, pump or filter controlling, etc.

The possibility passes different pressure seals at the DPT 200 adding with different membrane materials to reach an optimal adaptation to the application.

### Preferred areas of use are

-  Oil and gas industry
-  Chemical and petrochemical industry
-  Energy industry
-  Food and beverage
-  Paper industry




Differential pressure ranges					
Sensor type	A	B	C	D	E
Differential pressure range dp	10 mbar	60 mbar	400 mbar	2.5 bar	20 bar
Setting limits (offset and span in this range freely adjustable)	-10 ... 10 mbar	-60 ... 60 mbar	-400 ... 400 mbar	-2.5 ... 2.5 bar	-20 ... 20 bar
Lowest permissible span	1 mbar	2 mbar	4 mbar	25 mbar	200 mbar
Permissible static pressure optional	70 bar -	160 bar -	160 bar 400 bar	160 bar 400 bar	160 bar 400 bar
Rangeability TD (with respect to the differential pressure range dp)	10:1	30:1	100:1	100:1	100:1
Output signal / Supply					
Standard	2-wire: 4 ... 20 mA with HART® communication / $V_S = 12 \dots 42 V_{DC}$ with optional display: $V_S = 15 \dots 42 V_{DC}$				
Option IS-protection	2-wire: 4 ... 20 mA with HART® communication / $V_S = 15 \dots 28 V_{DC}$ (with or without display)				
Error signal Namur NE43	high / low (adjustable)				
Performance					
Accuracy	turn-down $\leq 10:1$ : $\leq \pm 0.075 \%$ FSO turn-down $> 10:1$ : $\leq \pm [0.0075 \times \text{turn-down}] \%$ FSO with turn-down = nominal pressure range / adjusted range (FSO = Full Scale Output)				
Influence supply	$\leq 0.001 \%$ FSO / 10 V				
Influence static pressure	type A: $\pm [0.015 \text{ mbar} + 0.1 \%$ of the adjusted range] / 40 bar type B: $\pm [0.06 \text{ mbar} + 0.075 \%$ of the adjusted range] / 160 bar type C: $\pm [0.2 \text{ mbar} + 0.05 \%$ of the adjusted range] / 160 bar type D: $\pm [1.25 \text{ mbar} + 0.05 \%$ of the adjusted range] / 160 bar type E: $\pm [10 \text{ mbar} + 0.05 \%$ of the adjusted range] / 160 bar				
Influence installation position	max. 400 Pa (can be compensated by zero-point correction)				
Long term stability	type A: $\leq \pm (0.5 \%$ x differential pressure range dp) / year at reference conditions type B: $\leq \pm (0.2 \%$ x differential pressure range dp) / year at reference conditions type C - E: $\leq \pm (0.1 \%$ x differential pressure range dp) / year at reference conditions				
Permissible load	without LC-display: $R_{max} = [(V_S - 12 \text{ V}) / 0.023 \text{ A}] \Omega$ with LC-display: $R_{max} = [(V_S - 15 \text{ V}) / 0.023 \text{ A}] \Omega$ HART®-communication: $R = 230 \Omega \dots 600 \Omega$				
Response time	type A: approx. 1.6 sec type B: approx. 0.4 sec type C: approx. 0.2 sec type D: approx. 0.2 sec type E: approx. 0.1 sec				
Damping	electronic: 0.1 ... 60 sec plus response time				
Thermal effects (Offset and Span)					
Temperature range -20 ... +65 °C	type A: $\pm [0.45 \times \text{turn-down} + 0.25] \%$ of the adjusted range] type B: $\pm [0.30 \times \text{turn-down} + 0.20] \%$ of the adjusted range] type C - E: $\pm [0.20 \times \text{turn-down} + 0.10] \%$ of the adjusted range]				
Temperature range -40 ... -20 °C and +65 ... +100 °C	type A: $\pm [0.45 \times \text{turn-down} + 0.25] \%$ of the adjusted range] type B: $\pm [0.30 \times \text{turn-down} + 0.20] \%$ of the adjusted range] type C - E: $\pm [0.20 \times \text{turn-down} + 0.10] \%$ of the adjusted range]				
Permissible temperatures					
Environment / storage	without display: -40 ... 85 °C				
	with display: -20 ... 65 °C (85 °C without function)				
Media wetted parts	silicone oil: -40 ... 100 °C (information: +125 °C short time, max. 30 min.)				
	fluorolube oil: -40 ... 100 °C (information: +125 °C short time, max. 30 min.)				
Electrical protection					
Short-circuit protection	permanent				
Reverse polarity protection	no damage, but also no function				
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 option	stainless steel 304 / 1.4301 stainless steel 316 / 1.4401 others on request
Diaphragm	standard option	stainless steel 316L / 1.4435 Hastelloy® C-276 others on request
Vent and dump valves, blanking plugs	standard option	stainless steel 304 / 1.4301 stainless steel 316 / 1.4401
Bolts and nuts	standard option	stainless steel 304 / 1.4301 stainless steel 316 / 1.4401 others on request
Type plate		stainless steel 316 / 1.4401
Housing	standard option	aluminium die cast with epoxy painting (blue) stainless steel 304 / 1.4301 others on request
Seals (media wetted)	standard options	FKM (-30 ... 250 °C) EPDM (-40...125 °C) NBR (-40 ... 125 °C) PTFE (-180...250 °C) others on request
Filling fluids	standard option (on request)	silicone oil (-40...125 °C) fluorolube oil (-40...125 °C) others on request
Explosion protection – aluminium die cast housing		
Approval AX18-DPT200 intrinsically safe version		IBExU 14 ATEX 1273 X / IECEx IBE 16.0005X group II: II 1/2G Ex ia IIC T4 Ga/Gb / II 2D Ex ia IIIC T 85 °C Db safety technical maximum values: $P_i = 660 \text{ mW}$ , $U_i = 28 \text{ V}$ , $I_i = 93 \text{ mA}$ , $C_i = 29.7 \text{ nF}$ , $L_i$ negligible permissible temperatures for environment: -40 ... 60 °C
Approval AX18B-DPT200 flameproof enclosure		IBExU 15 ATEX 1110 X / IECEx IBE 16.0006X group II: II 2G Ex db IIC T6 Gb permissible temperatures for environment: -40 ... 65 °C
Explosion protection – stainless steel housing		
Approval AX18-DPT200 intrinsically safe version		IBExU 14 ATEX 1273 X / IECEx IBE 16.0005X group I (mines): I M1 Ex ia I Ma group II: II 1G Ex ia IIC T4 Ga / II 2D Ex ia IIIC T85°C Db safety technical maximum values: $P_i = 660 \text{ mW}$ , $U_i = 28 \text{ V}$ , $I_i = 93 \text{ mA}$ , $C_i = 29.7 \text{ nF}$ , $L_i$ negligible permissible temperatures for environment: -40 ... 60 °C
Miscellaneous		
Display (optionally)		type: LCD, lines: 2, digits: 8, bargraph: 0...100%, rotatability: 90°-steps and / or by turn of the electronic case
Configuration		- offset / span local via 2 buttons - local configuration with an optional display - complete configuration via HART®
Mounting bracket (optionally)		material CF8M or stainless steel 304 / 1.4401 weight 0.45 kg (inclusive bolts and nuts)
Ingress protection		IP 67
Installation position		any
Weight		approx. 3 kg (depending on version)
Current consumption		approx. 23 mA
Operational life		100 million load cycles
CE-conformity		EMC Directive: 2014/30/EU
ATEX Directive		2014/34/EU
Connections		
Electrical connection		terminal clamps in clamping chamber (for cable-Ø max.2.5 mm²)
Process connections	standard option	internal thread 1/4" - 18 NPT / fixing 7/16 UNF internal thread 1/4" - 18 NPT / fixing M10 oval flange 1/2" NPT internal thread adapter M20x1.5 others on request
Wiring diagram		

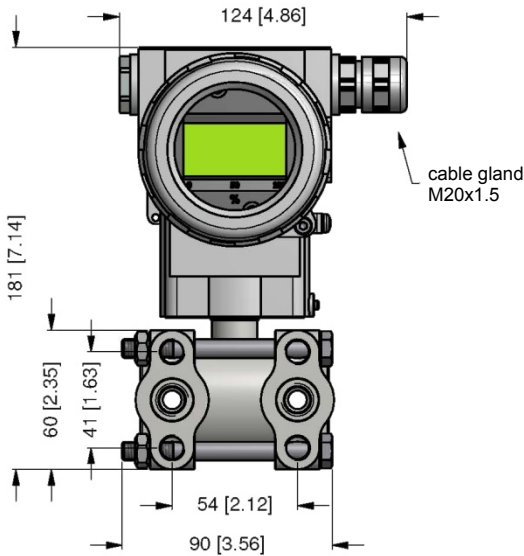
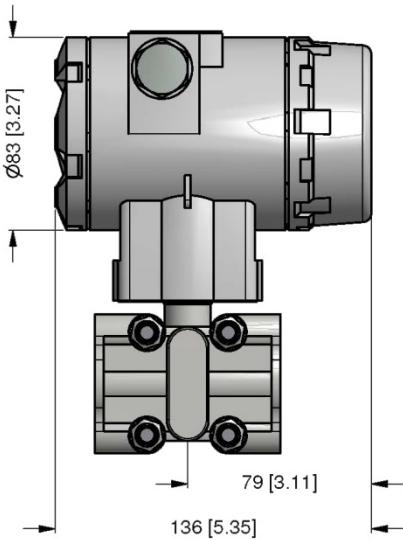
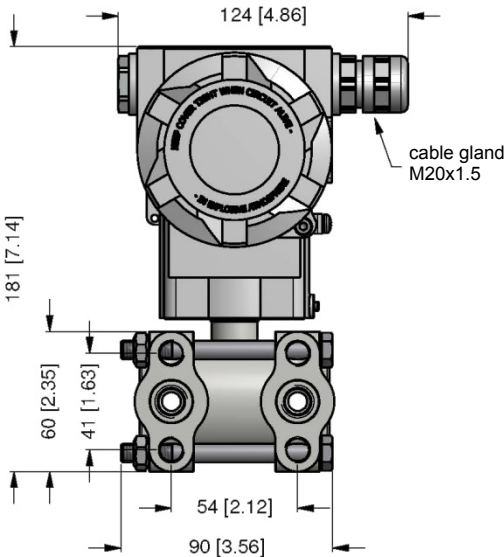
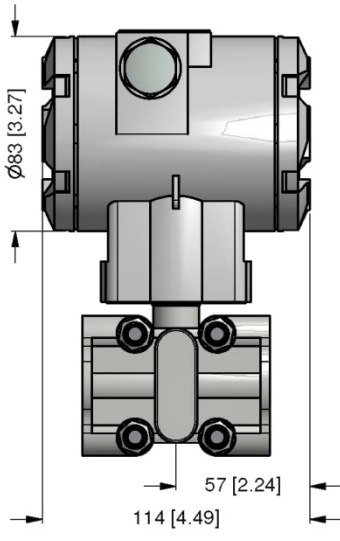
# DPT 200

Differential Pressure Transmitter

Technical Data

Pin configuration	
Electrical connection	terminal clamps
Supply + ( $V_s +$ )	+
Supply / Test - ( $V_s -$ )	-
Test +	TEST +
Ground	

Dimensions (mm / in)	
<b>DPT 200 with display</b>	
	
<b>DPT 200 without display</b>	
	

*HART® is a registered trade mark of HART Communication Foundation; Hastelloy® is a brand name of Haynes International Inc.*

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## Ordering code DPT 200

DPT 200			□□□ - □ - □ - □ - □ - □ - □□ - □□ - □ - □□ - □ - □□ - □ - □□
<b>Pressure</b>			
differential pressure			3 4 3
<b>Input</b>			
	[bar]		
Type A:	0 ... 1 mbar up to	0 ... 10 mbar	A
Type B:	0 ... 2 mbar up to	0 ... 60 mbar	B
Type C:	0 ... 4 mbar up to	0 ... 400 mbar	C
Type D:	0 ... 25 mbar up to	0 ... 2.5 bar	D
Type E:	0 ... 200 mbar up to	0 ... 20 bar	E
	customer		9
			consult
<b>Maximum static pressure</b>			
	70 bar (only type A)		7
	160 bar (type B - E)		1
	400 bar (type C - E)		4
<b>Output</b>			
	4 ... 20 mA / 2-wire		
	with HART®-communication		H
	group II Ex ia 4 ... 20 mA / 2-wire		
	with HART®-communication		I
	group II Ex d 4 ... 20 mA / 2-wire		
	with HART®-communication <sup>1</sup>		G
	group I Ex ia 4 ... 20 mA / 2-wire		
	with HART®-communication (mines) <sup>2</sup>		FH
	customer		9
			consult
<b>Accuracy</b>			
	0.075 %		1 7
<b>Housing</b>			
	aluminium		L
	stainless steel 1.4301 (304)		2
			consult
<b>Display</b>			
	without display		A N
	with backlight display		A L
<b>Electrical connection</b>			
	terminals / cable gland M20x1.5		A K 0
	terminals / cable gland 1/2" NPT		A K 5
	customer		9 9 9
			consult
			consult
<b>Process connection H-side</b>			
	1/4" - 18 NPT F / fixing 7/16 UNF		N 2 0
	1/4" - 18 NPT F / fixing M10		N 3 0
	1/4" - 18 NPT (F / vertical) / fixing 7/16 UNF		N 2 1
	1/4" - 18 NPT (F / vertical) / fixing M10		N 3 1
	1/2" NPT F with adapter		N 5 7
	M20x1.5 F with adapter		N 2 6
	with volume reduced flange		N 2 5
	customer		9 9 9
			consult
			consult
<b>Valve H-side</b>			
	without		0
	with vent		1
	with vent (top)		2
	with vent (bottom)		3
<b>Process connection L-side (identical with H side)</b>			
	1/4" - 18 NPT F / fixing 7/16 UNF		N 2 0
	1/4" - 18 NPT F / fixing M10		N 3 0
	1/4" - 18 NPT (F / vertical) / fixing 7/16 UNF		N 2 1
	1/4" - 18 NPT (F / vertical) / fixing M10		N 3 1
	1/2" NPT F with adapter		N 5 7
	M20x1.5 F with adapter		N 2 6
	with volume reduced flange		N 2 5
	customer		9 9 9
<b>Valve L-side (identical with H side)</b>			
	without		0
	with valve (straight)		1
	with valve (top)		2
	with valve (bottom)		3
<b>Material flange, valves, screws, ...</b>			
	stainless steel 1.4301 (304)		0 2
	stainless steel 1.4401 (316)		1 2
<b>Diaphragm / filling fluid</b>			
	stainless steel 1.4435 (316L) / silicone oil		1 1
	Hastelloy® C-276 (2.4819) / silicone oil		H 1
	customer		9 9
			consult
<b>Seals</b>			
	FKM		1
	EPDM		3
	NBR		5
	PTFE		4
	customer		9
			consult
<b>Special version</b>			
	standard		0 0 0
	square root function (flow)		5 8 0
	customer		9 9 9
			consult

<sup>1</sup> only in combination with aluminium housing

<sup>2</sup> only in combination with stainless steel housing

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