



# 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.

DPT 200 can be equipped with various chemical seals and 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 <sup>1</sup>	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	70 bar	160 bar	160 bar	160 bar	160 bar
optional	-	-	400 bar	400 bar	400 bar
Rangeability TD (with respect to the differential pressure range dp)	10:1	30:1	100:1	100:1	100:1
<sup>1</sup> only possible in combination with process connection (code N20), without valve (code 0) and with PTFE seal (code 4)					
Output signal / Supply					
Standard	2-wire: 4 ... 20 mA with HART® communication / V <sub>S</sub> = 16.5 ... 42 V <sub>DC</sub>				
Option IS-version	2-wire: 4 ... 20 mA with HART® communication / V <sub>S</sub> = 16.5 ... 28 V <sub>DC</sub>				
Error signal	Namur NE43	high / low (adjustable)			
Performance					
Accuracy	turn-down ≤ 10:1: ≤ ± 0.075 % FSO turn-down > 10:1: ≤ ± [0.0075 x turn-down] % FSO sensor type A: turn-down ≤ 10:1: ≤ ± [0.075 + 0.025 x turn-down] % FSO with turn-down = nominal pressure range / adjusted range (FSO = Full Scale Output)				
Influence supply	≤ 0.001 % FSO / 10 V				
Influence static pressure	type A: ± [0.015 mbar + 0.1 % of the adjusted range] / 40 bar type B: ± [0.06 mbar + 0.075 % of the adjusted range] / 160 bar type C: ± [0.2 mbar + 0.05 % of the adjusted range] / 160 bar type D: ± [1.25 mbar + 0.05 % of the adjusted range] / 160 bar type E: ± [10 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: ≤ ± (0.5 % x differential pressure range dp) / year at reference conditions type B: ≤ ± (0.2 % x differential pressure range dp) / year at reference conditions type C - E: ≤ ± (0.1 % x differential pressure range dp) / year at reference conditions				
Permissible load	R <sub>max</sub> = [(V <sub>S</sub> - 16.5 V) / 0.023 A] Ω HART®-communication: R = 230 Ω ... 600 Ω				
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: ± [0.45 x turn-down + 0.25] % of the adjusted range type B: ± [0.30 x turn-down + 0.20] % of the adjusted range type C - E: ± [0.20 x turn-down + 0.10] % of the adjusted range				
Temperature range -40 ... -20°C and +65 ... +100°C	type A: ± [0.45 x turn-down + 0.25] % of the adjusted range type B: ± [0.30 x turn-down + 0.20] % of the adjusted range type C - E: ± [0.20 x 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		
Filling fluids					
Standard	silicone oil (-40...125 °C)				
Option (on request)	fluorolube oil (-40...125 °C)		others on request		

<b>Materials</b>	
Pressure port / flange	stainless steel 1.4401 (316) <span style="float: right;">others on request</span>
Housing	standard: aluminium die cast with epoxy painting (blue) option: stainless steel 1.4301 (304) <span style="float: right;">others on request</span>
Cable gland	aluminium die cast housing: PA grey (for cable-Ø 5 ... 9 mm) stainless steel housing: stainless steel 1.4404 (316L) (for cable-Ø 7 ... 12 mm) option IS-version: specified under "Explosion protection"
Vent and dump valves, blanking plugs, type plate	stainless steel 1.4401 (316) <span style="float: right;">others on request</span>
Bolts and nuts	steel, zinc flake coated
Seals	standard: FKM (-30 ... 250 °C) options: EPDM (-40 ... 125 °C) NBR (-40 ... 125 °C) PTFE (-180 ... 250 °C) <span style="float: right;">others on request</span>
Diaphragm	standard: stainless steel 1.4435 (316L) option: Hastelloy® C-276 (2.4819) <span style="float: right;">others on request</span>
Media wetted parts	pressure port, seal, diaphragm
<b>Explosion protection – aluminium die cast housing</b>	
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 cable gland in PA grey; for cable-Ø 5 ... 9 mm
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 cable gland in brass; for cable-Ø 10 ... 14 mm
<b>Explosion protection – stainless steel housing</b>	
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 cable gland in stainless steel 1.4404 (316L); for cable-Ø 7 ... 12 mm
<b>Miscellaneous</b>	
Display (optionally)	type: LCD, lines: 2, digits: 8, bargraph: 0...100%, rotatability: 90°-steps and / or by turn of display module
Configuration	- offset / span local via 2 buttons - local configuration with an optional display - complete configuration via HART®
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
<b>Wiring diagram</b>	

# DPT 200

Differential Pressure Transmitter

Technical Data

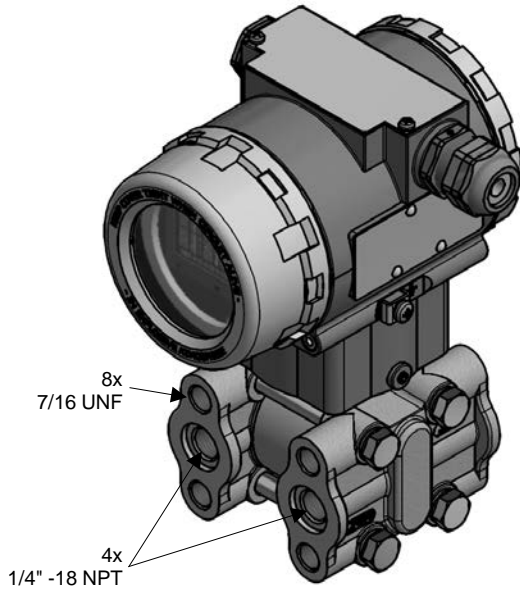
Pin configuration	
Electrical connection	terminal clamps (for cable-Ø max. 2.5 mm <sup>2</sup> )
Supply + (V <sub>s</sub> +)	+
Supply / Test - (V <sub>s</sub> -)	-
Test +	TEST +
Ground	⊕

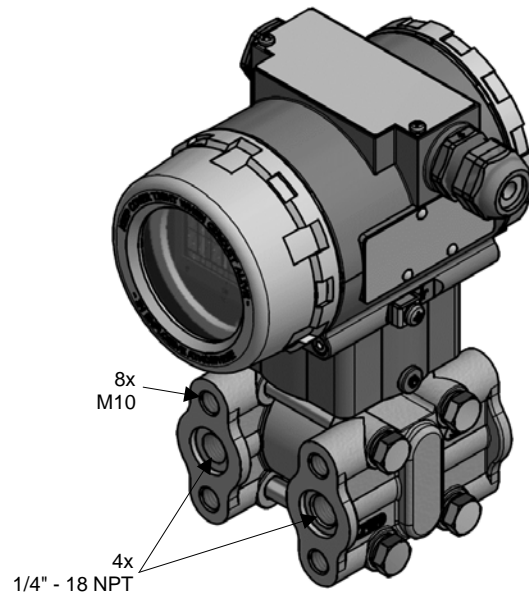
Dimensions (mm / in)	
<b>DPT 200 with display</b>	
<b>DPT 200 without display</b>	

## Process connections

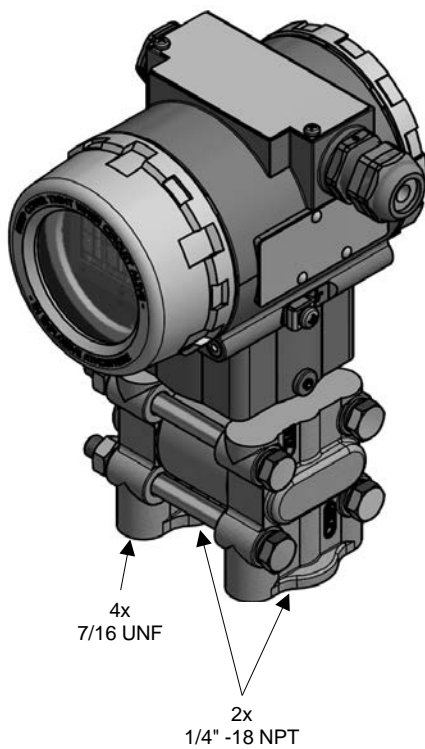
**code N20 / N25**  
1/4" - 18 NPT / fixing 7/16 UNF



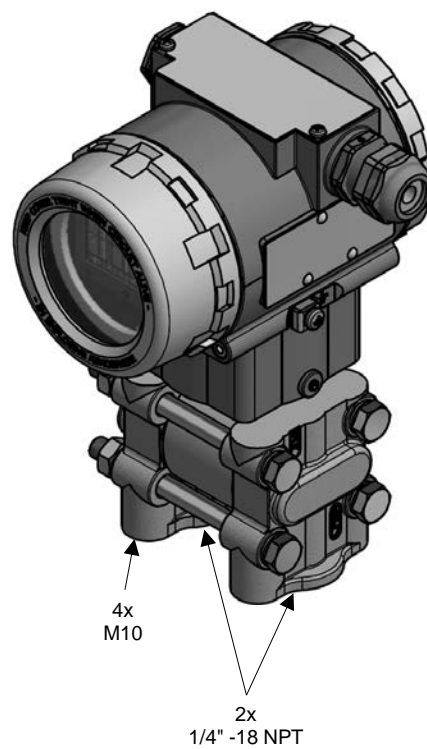
**code N30**  
1/4" - 18 NPT / fixing M10



**code N21**  
1/4" - 18 NPT vertical / fixing 7/16 UNF



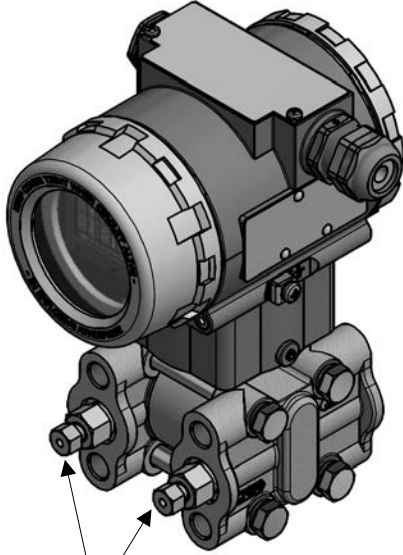
**code N31**  
1/4" - 18 NPT vertical / fixing M10



⇒ In scope of delivery two locking screws 1/4" - 18 NPT are included as standard.

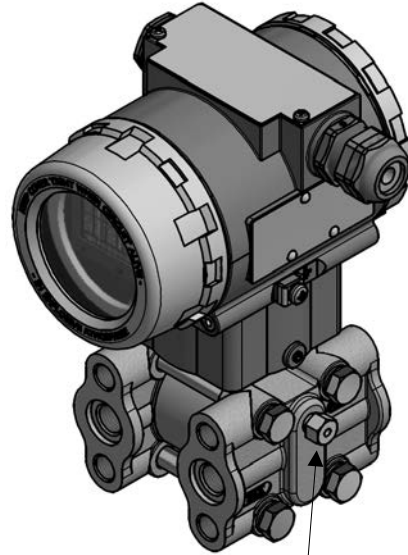
Valves (optionally)

code 1



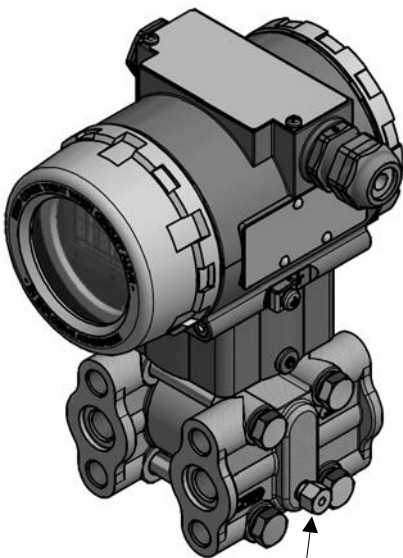
vent position:  
straight (2x)

code 2



vent position:  
top (2x)

code 3



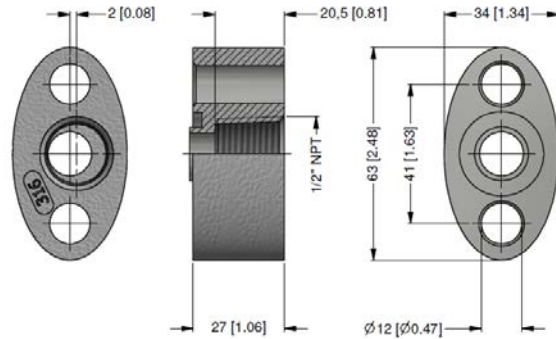
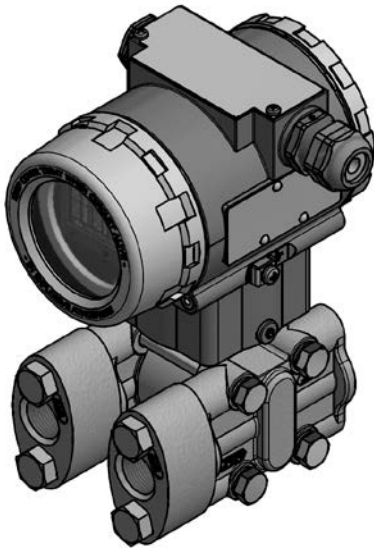
vent position:  
bottom (2x)

# DPT 200

Differential Pressure Transmitter

Accessories

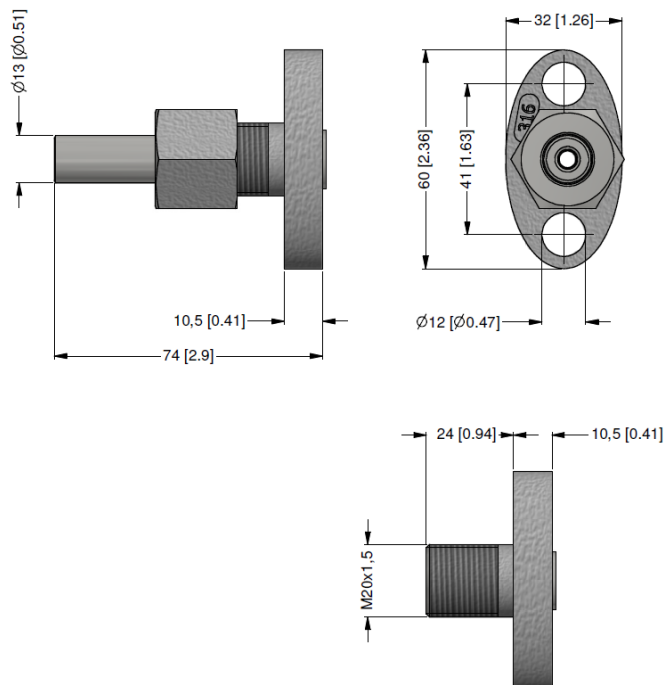
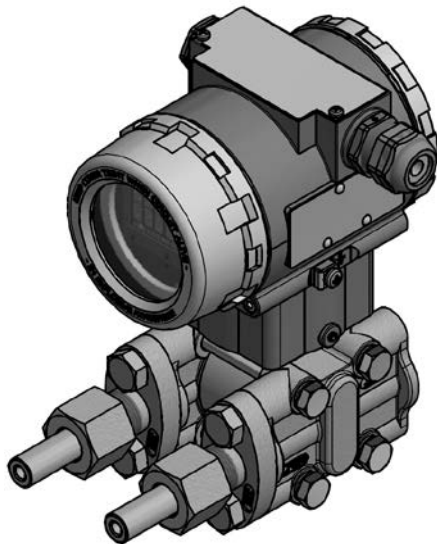
## Oval flange adapter 1/2" NPT female



### Technical data

Material of adapter	stainless steel 1.4401 (316)
Weight	approx. 300 g
Scope of delivery	two adapter, four locking screws 7/16 UNF x 1 3/4" A2
<b>Ordering type</b>	<b>Ordering code</b>
Oval flange adapter with 1/2" NPT female	Z1004181

## Oval flange adapter M20x1.5 male with tube $\varnothing$ 13 mm (optionally with volume reduced flange - code N25)



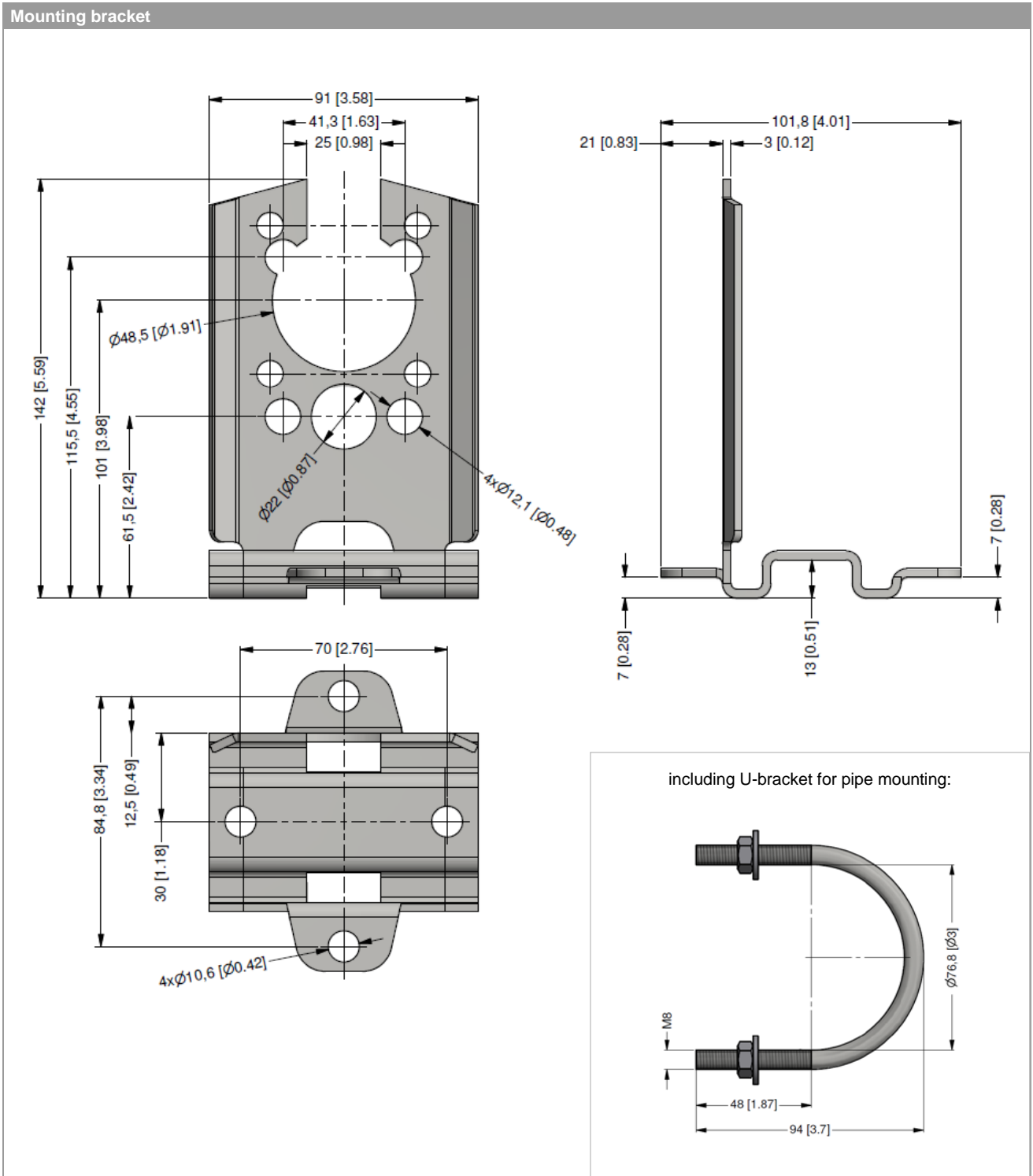
### Technical data

Material of adapter / tube	stainless steel 1.4401 (316)
Weight	approx. 250 g
Scope of delivery	two adapter, four locking screws 7/16 UNF x 1" A2
<b>Ordering type</b>	<b>Ordering code</b>
Oval flange adapter M20x1.5 male with tube	Z1004182

# DPT 200

Differential Pressure Transmitter

Accessories

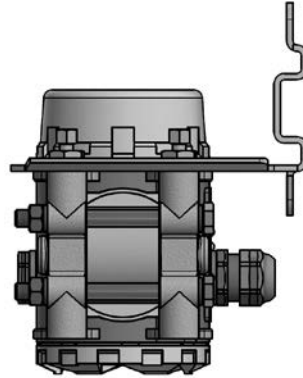
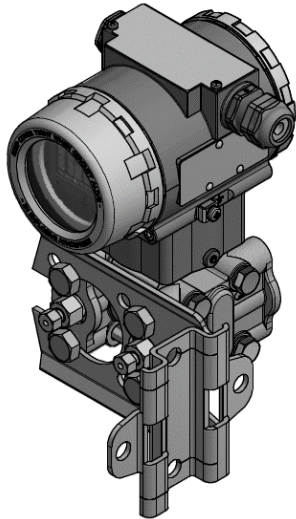


<b>Technical data</b>	
Material of mounting bracket	stainless steel 1.4301 (304)
Weight	approx. 500 g
Scope of delivery	mounting bracket, four locking screws 7/16 UNF x 1 3/4" A2, U-bracket for pipe mounting with two nuts
Ordering type	Ordering code
Mounting bracket	Z1004179

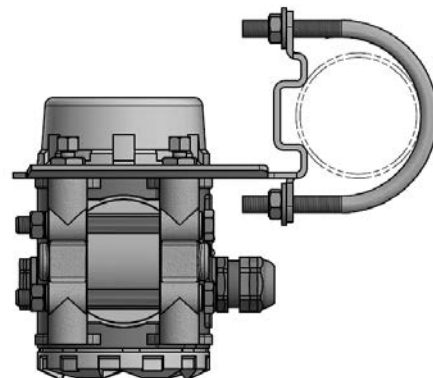
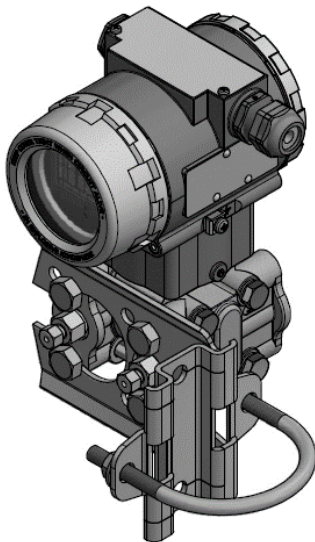


## Mounting variants for mounting bracket

### wall mounting



### pipe mounting



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## Ordering code DPT 200

**DPT 200**

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<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																		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																		H				
	with HART®-communication																		I				
	group II Ex ia 4 ... 20 mA / 2-wire																		G				
	with HART®-communication																		FH				
	group II Ex d 4 ... 20 mA / 2-wire																						
	with HART®-communication <sup>2</sup>																						
	group I Ex ia 4 ... 20 mA / 2-wire																						
	with HART®-communication (mines) <sup>3</sup>																						
	customer																		9				
																			consult				
<b>Accuracy</b>																							
	0.075 %																		1 7				
<b>Housing</b>																							
	aluminium																		L				
	stainless steel 1.4301 (304)																		2				
<b>Display</b>																							
	without display																		A N				
	with backlight display																		A L				
<b>Electrical connection</b>																							
	terminals / cable gland M20x1.5																		A K 0				
	customer																		9 9 9				
																			consult				
<b>Process connection H-side / L-side (identical)</b>																							
	1/4" - 18 NPT / fixing 7/16 UNF																		N 2 0				
	1/4" - 18 NPT / fixing M10																		N 3 0				
	1/4" - 18 NPT, vertical / fixing 7/16 UNF																		N 2 1				
	1/4" - 18 NPT, vertical / fixing M10																		N 3 1				
	1/4" - 18 NPT / fixing 7/16 UNF																		N 2 5				
	with volume reduced flange																		N 2 5				
	customer																		9 9 9				
																			9 9 9				
																			consult				
<b>Valve H-side / L-side (identical)</b>																							
	without																		0				
	with vent (straight)																		1				
	with vent (top) <sup>4</sup>																		2				
	with vent (bottom) <sup>4</sup>																		3				
<b>Material flange, valves</b>																							
	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>Seal</b>																							
	FKM																		1				
	EPDM																		3				
	NBR																		5				
	PTFE																		4				
	customer																		9				
																			consult				
<b>Special version</b>																							
	standard																		0 0 0				
	customer																		9 9 9				
																			consult				
<b>Accessories</b>																							
	oval flange adapter 1/2" NPT female																		Z1004181				
	optionally with N25																		Z1004182				
	M20x1.5 male with tube																		Z1004179				
	mounting bracket																		Z1004179				
	in stainless steel 1.4301 (304)																						

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<sup>1</sup> only possible in combination with process connection (code N20), without valve (code 0) and with PTFE seal (code 4)  
<sup>2</sup> only in combination with aluminium housing  
<sup>3</sup> only in combination with stainless steel housing  
<sup>4</sup> only in combination with process connection (code N20 or N30)  
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