



DPT 100

Differential Pressure Transmitter for Process Industry

accuracy according to IEC 61298-2:
0.1 % FSO

Differential pressure

from 10 mbar up to 20 bar

Static pressure

max. 400 bar

Output signals

2-wire: 4 ... 20 mA

RS485 with Modbus RTU protocol

IO-Link according to specification V 1.1
smart sensor profile

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.

About signal processing in modern systems to simplify, the user can either a classic analogue output signal, a digital signal transmission via RS485 Interface (Modbus communication protocol RTU) or an IO-Link interface based on the standard IEC 61131-9.

Preferred areas of use are

Test engineering / leak testing



Machine and plant engineering



Environmental technology



Energy production



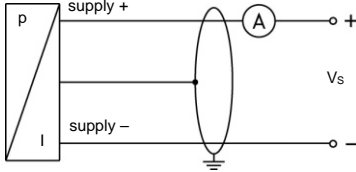
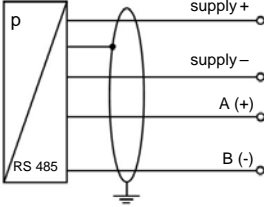
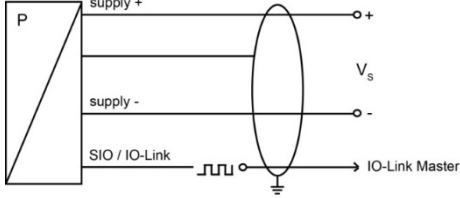
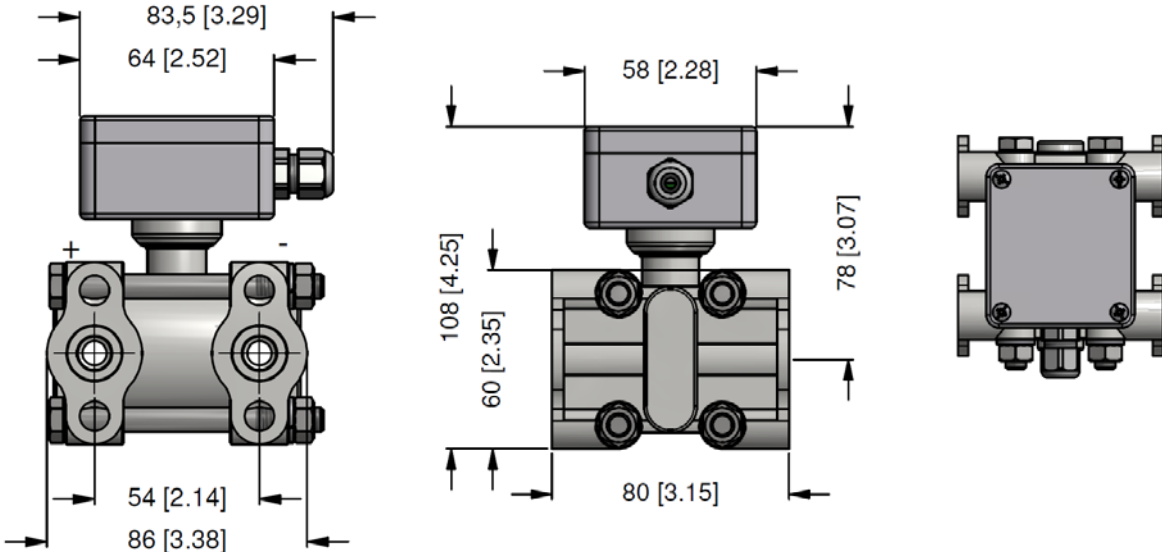
Modbus®
IO-Link

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)	analogue: 4 ... 20 mA / V _S = 12 ... 32 V _{DC}					
Option (Modbus)	digital: RS 485 with Modbus RTU protocol / V _S = 9 ... 32 V _{DC} (delay time: 500 msec) / open protocol, master slave architecture, 247 slaves by a master questioned, binary form					
Option (IO-Link)	digital: IO-Link (measured value transmission) / SIO (switching output) / V _S = 18 ... 30 V _{DC}					
Specification	V 1.1 / slave / smart sensor profile					
Data transfer	38.4 kbit/sec (COM2)					
Mode	SIO / IO-Link					
Standardization	IEC 61131-9					
Performance						
Accuracy ¹	p _N ≥ 60 mbar: ≤ ± 0.1 % FSO p _N < 60 mbar: ≤ ± 0.2 % FSO					
Permissible load	R _{max} = [(V _S – V _{S min}) / 0.02 A] Ω					
Influence supply	supply: 0.05 % FSO / 10 V load: 0.05 % FSO / kΩ					
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 ≥ 60 mbar: ≤ ± 0.05 %FSO/ year at reference conditions p _N < 60 mbar: ≤ ± 0.15 %FSO/ year at reference conditions					
Switching current (SIO)	max. 200 mA					
Switching frequency (SIO)	max. 200 Hz					
Accuracy switching output (SIO) ¹	≤ ± 0.25 % FSO					
Sampling rate	250 Hz; for IO-Link: 400 Hz					
Turn-on time	approx. 260 msec; for SIO-Mode: approx. 20 msec					
Response time (10 ... 90 %)	10 msec; for SIO-Mode: < 4 msec					
¹ accuracy according to IEC 61298-2 – limit point adjustment (non-linearity, hysteresis, repeatability)						
Thermal effects (offset and span)						
Thermal error	≤ ± 0.1 % FSO / 10 K					
In 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 / 10 ... 2000 Hz			according to DIN EN 60068-2-6		
Shock	500 g / 1 msec half sine			according to DIN EN 60068-2-27		
Materials						
Pressure port / flange	stainless steel 1.4401 (316)				others on request	
Diaphragm	stainless steel 1.4404 (316L)				others on request	
Vent and dump valves, blanking plugs	stainless steel 1.4401 (316)					
Bolts and nuts	steel, zinc flake coated				others on request	
Housing	aluminium die cast with epoxy painting (grey)				others on request	
Cable gland	polyamide					
Seals (media wetted)	standard: FKM options: EPDM, NBR				others on request	
Filling fluids	silicone oil				others on request	
Media wetted parts	pressure port, seal of pressure port, diaphragm					

DPT 100

Differential Pressure Transmitter

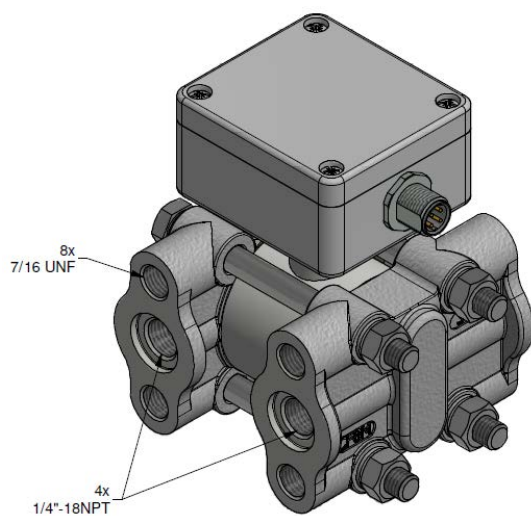
Technical Data

Miscellaneous		
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 mm²), male plug M12x1 (4-pin) metal	
Process connections		
Standard option	internal thread 1/4" - 18 NPT / fixing 7/16 UNF internal thread 1/4" - 18 NPT / fixing M10	
	others: on request	
Wiring diagram		
2-wire-system (current)	<div>RS485 / Modbus RTU</div> <div>IO-Link</div>	
	 	
Pin configuration		
Electrical connection	terminal clamps	M12x1 / metal (4-pin)
Supply +	IN +	1
Supply -	IN -	3
for RS485 / Modbus RTU:		
A (+)	A	2
B (-)	B	4
for IO-Link ⁴		
SIO / IO-Link	-	4
Ground	⊕	plug housing
⁴ only possible in combination with male plug M12x1 (4-pin), metal		
Dimensions (mm / in)		
		

Process connections

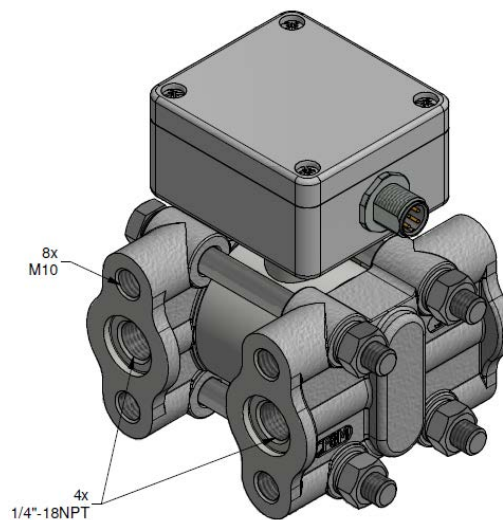
code N20

1/4" - 18 NPT F / fixing 7/16 UNF



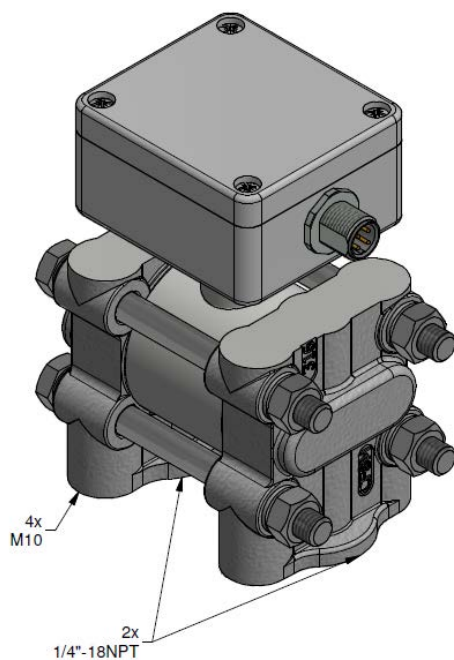
Code N30

1/4" - 18 NPT F / fixing M10



Code N31

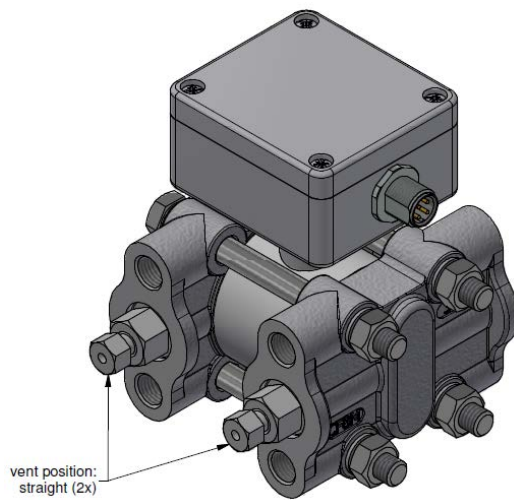
1/4" - 18 NPT (F / vertical) / fixing M10



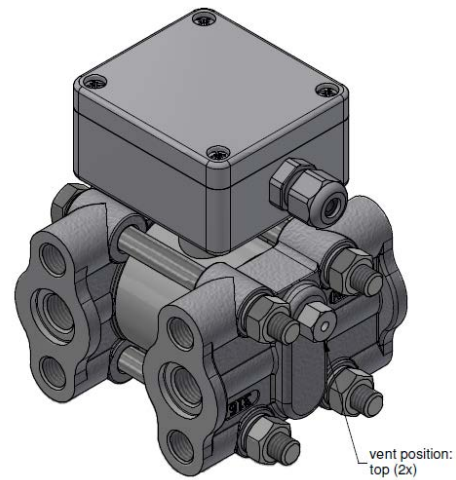
⇒ In scope of delivery two locking screws 1/4" - 18 NPT are included as standard.

Ventile (optional)

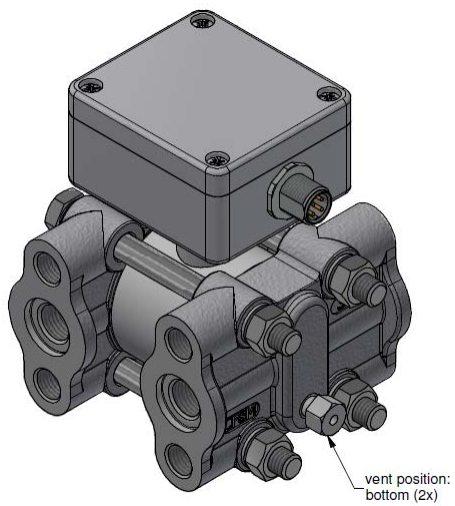
code 1



code 2



code 3

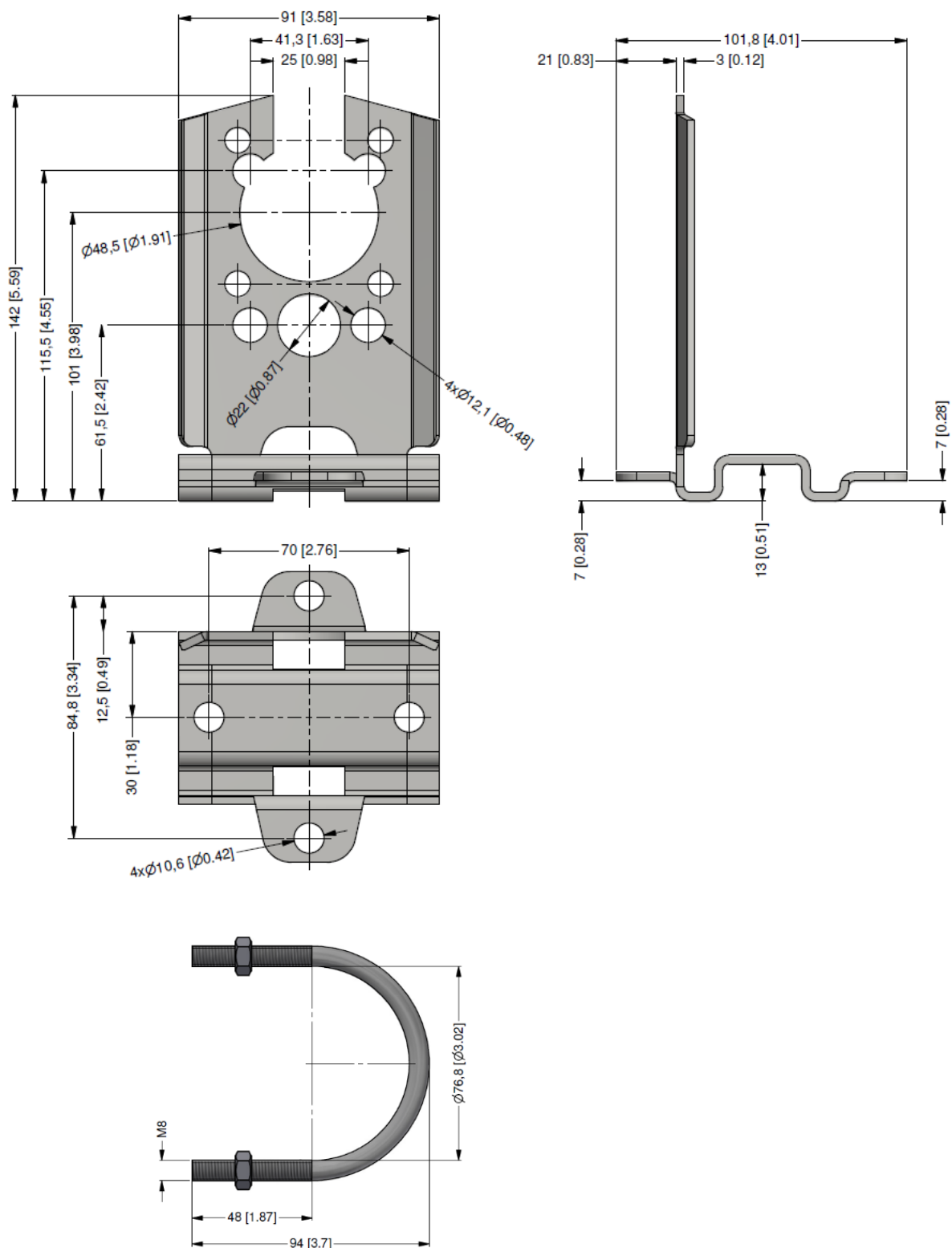


DPT 100

Differential Pressure Transmitter

Accessories

Mounting bracket



Technical data

Material of mounting bracket	Edelstahl 1.4301 (304)
Weight	approx. 500 g
Scope of delivery	mounting bracket, four locking screws 7/16 UNF x 3/4" A2, U-bracket for pipe mounting with two nuts and washers

Ordering type

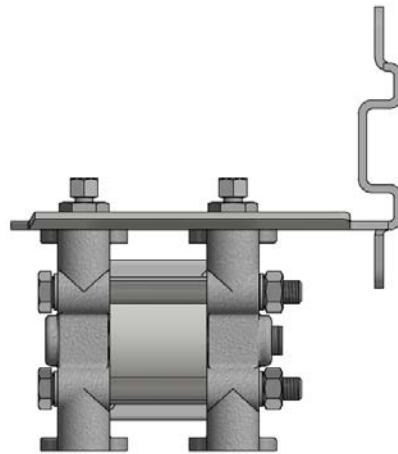
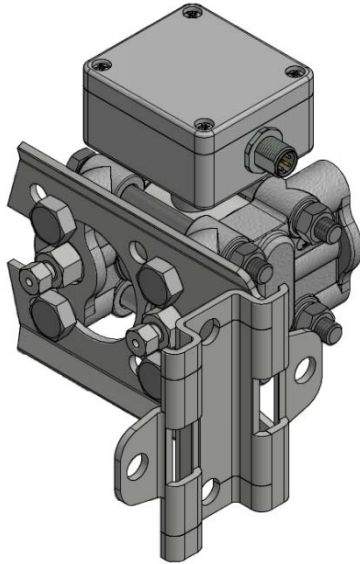
Mounting bracket

Ordering code

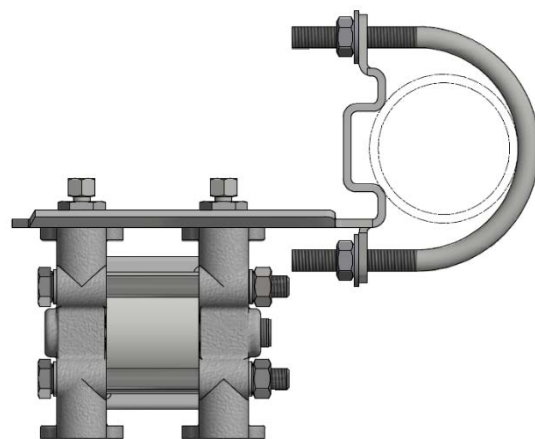
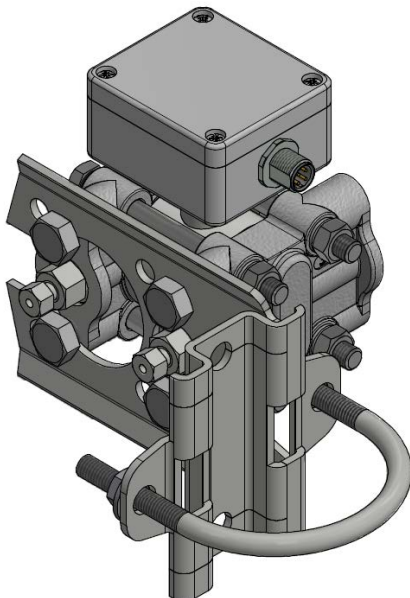
Z1004179

Mounting variants for mounting bracket

wall mounting



pipe mounting



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Ordering code DPT 100

DPT 100

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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		
IO-Link / SIO ¹					IO		
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 / 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					2		
with vent (bottom) ²					3		
Material pressure port, flange, valves, etc.							
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
Accessories							
mounting bracket in stainless steel 1.4301 (304)					Z1004179		

¹ only possible in combination with male plug M12x1 (4-pin), metal

² only possible in combination with process connection (code N20 or N30)