

# DMP 333

## Industrial Pressure Transmitter for High Pressure

Stainless Steel Sensor

accuracy according to IEC 60770:  
standard: 0.35 % FSO  
option: 0.25 / 0.1 % FSO



### Nominal pressure

from 0 ... 100 bar up to 0 ... 600 bar

### Output signals

2-wire: 4 ... 20 mA

3-wire: 0 ... 20 mA / 0 ... 10 V

others on request

### Special characteristics

- ▶ excellent long-term stability, also with high dynamic pressure loads
- ▶ insensitive to pressure peaks
- ▶ high overpressure capability

### Optional versions

- ▶ IS-version  
Ex ia = intrinsically safe for gases and dusts
- ▶ SIL 2 version according to IEC 61508 / IEC 61511
- ▶ customer specific versions

The pressure transmitter type DMP 333 has been especially designed for use in hydraulic applications with high static and dynamic pressure. The transmitter is characterized by an excellent long term stability, also under fast changing pressure as well as positive and negative pressure peaks.

The modular concept of the device allows to combine different stainless steel sensors and electronic modules with a variety of electrical and mechanical versions. Thus a diversity of variations is created, meeting almost all requirements in hydraulic applications.

### Preferred areas of use are

#### *Plant and machine engineering*

Machine tools

Hydraulic presses

Injection moulding machine

Handling equipment

Elevated platforms

Test benches



Mobile hydraulics



Input pressure range						
Nominal pressure gauge / abs.	[bar]	100	160	250	400	600
Overpressure	[bar]	210	600	1000	1000	1000
Burst pressure $\geq$	[bar]	1000	1000	1250	1250	1800
Output signal / Supply						
Standard	2-wire:	4 ... 20 mA / $V_S = 8 \dots 32 V_{DC}$			SIL-version: $V_S = 14 \dots 28 V_{DC}$	
Option IS-protection	2-wire:	4 ... 20 mA / $V_S = 10 \dots 28 V_{DC}$			SIL-version: $V_S = 14 \dots 28 V_{DC}$	
Options 3-wire	3-wire:	0 ... 20 mA / $V_S = 14 \dots 30 V_{DC}$ 0 ... 10 V / $V_S = 14 \dots 30 V_{DC}$				
Performance						
Accuracy <sup>1</sup>	standard:	$\leq \pm 0.35\%$ FSO				
	option 1:	$\leq \pm 0.25\%$ FSO				
	option 2:	$\leq \pm 0.10\%$ FSO				
Permissible load	current 2-wire:	$R_{max} = [(V_S - V_{S min}) / 0.02 A] \Omega$				
	current 3-wire:	$R_{max} = 240 \Omega$				
	voltage 3-wire:	$R_{min} = 10 k\Omega$				
Influence effects	supply:	0.05 % FSO / 10 V				
	load:	0.05 % FSO / $k\Omega$				
Long term stability		$\leq \pm 0.1\%$ FSO / year at reference conditions				
Response time	2-wire:	$\leq 10$ msec				
	3-wire:	$\leq 3$ msec				
<sup>1</sup> accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)						
Thermal effects (offset and span)						
Tolerance band		$\leq \pm 0.75\%$ FSO				
in compensated range		0 ... 70 °C				
Permissible temperatures						
Medium		-40 ... 125 °C				
Electronics / environment		-40 ... 85 °C				
Storage		-40 ... 100 °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						
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		stainless steel 1.4404 (316 L)				
Housing		stainless steel 1.4404 (316 L)				
Option compact field housing		stainless steel 1.4301 (304) cable gland M12x1.5, brass, nickel plated (clamping range 2 ... 8 mm)				
Seals		standard: FKM options: EPDM (for $p_N \leq 160$ bar) others on request				
Diaphragm		stainless steel 1.4435 (316 L)				
Media wetted parts		pressure port, seals, diaphragm				
Explosion protection (only for 4 ... 20 mA / 2-wire)						
Approvals DX19-DMP 333		IBExU 10 ATEX 1068 X / IECEx IBE 12.0027X zone 0: II 1G Ex ia IIC T4 Ga zone 20: II 1D Ex ia IIIC T135 °C Da				
Safety technical maximum values		$U_i = 28 V_{DC}$ , $I_i = 93$ mA, $P_i = 660$ mW, $C_i \approx 0$ nF, $L_i \approx 0$ $\mu$ H, the supply connections have an inner capacity of max. 27 nF to the housing				
Permissible temperatures for environment		in zone 0: -20 ... 60 °C with $p_{atm}$ 0.8 bar up to 1.1 bar in zone 1 or higher: -40/-20 ... 70 °C				
Connecting cables (by factory)		cable capacitance: signal line/shield also signal line/signal line: 160 pF/m cable inductance: signal line/shield also signal line/signal line: 1 $\mu$ H/m				

Miscellaneous	
Option SIL2 version <sup>2</sup>	according to IEC 61508 / IEC 61511
Current consumption	signal output current: max. 25 mA signal output voltage: max. 7 mA
Weight	approx. 140 g
Installation position	any <sup>3</sup>
Operational life	100 million load cycles
CE-conformity	EMC Directive: 2014/30/EU Pressure Equipment Directive: 2014/68/EU (module A) <sup>4</sup>
ATEX Directive	2014/34/EU

<sup>2</sup> only for 4 ... 20 mA / 2-wire, not in combination with accuracy 0.1 %

<sup>3</sup> Pressure transmitters are calibrated in a vertical position with the pressure connection down.

<sup>4</sup> This directive is only valid for devices with maximum permissible overpressure > 200 bar.

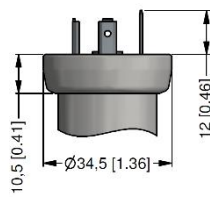
### Wiring diagrams



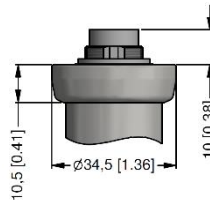
### Pin configuration

Electrical connection	ISO 4400	Binder 723 (5-pin)	M12x1 / metal (4-pin)	Bayonet MIL-C-26482 (10-6)	
				2-wire	3-wire
Supply +	1	3	1	A	A
Supply -	2	4	2	B	D
Signal + (for 3-wire)	3	1	3	-	B
Shield	ground pin	5	4	pressure port	
Electrical connection	compact field housing		cable colours (IEC 60757)		
	V <sub>S+</sub> V <sub>S-</sub> S+ GND				
Supply +	V <sub>S+</sub>		WH (white)		
Supply -	V <sub>S-</sub>		BN (brown)		
Signal + (for 3-wire)	S+		GN (green)		
Shield	GND		GNYE (green-yellow)		

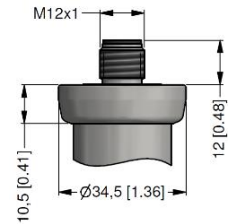
**Electrical connections (dimensions mm / in)**



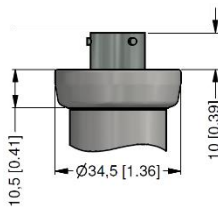
ISO 4400  
(IP 65)



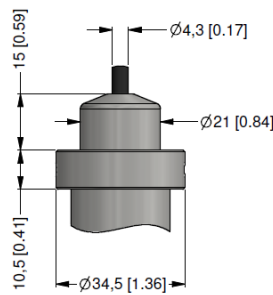
Binder series 723, 5-pin  
(IP 67)



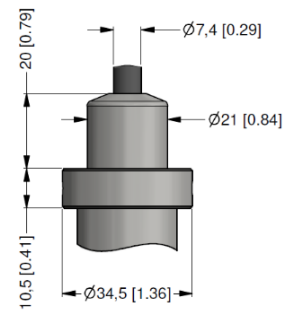
M12x1, 4-pin  
(IP 67)



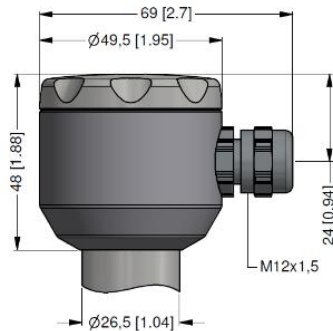
Bayonet MIL-C-26482 (10-6)  
(IP 67)



cable outlet with PVC cable  
(IP 67)<sup>5</sup>



cable outlet, cable with  
ventilation tube (IP 68)<sup>6</sup>



compact field housing  
(IP 67)

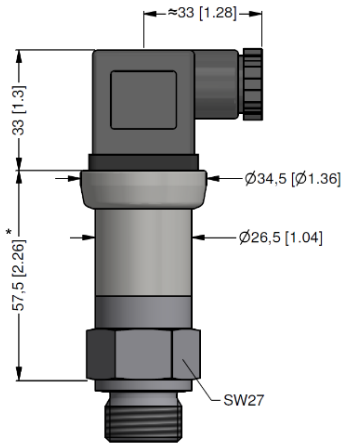
⇒ universal field housing stainless steel 1.4404 (316 L) with cable gland M20x1.5 (ordering code 880) and other versions on request

<sup>5</sup> standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 ... 70 °C)

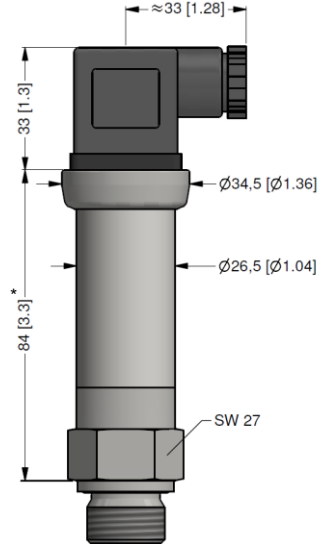
<sup>6</sup> different cable types and lengths available, permissible temperature depends on kind of cable

## Dimensions (mm / in)

standard

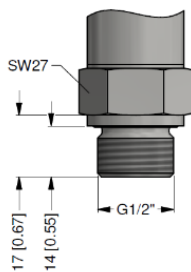


SIL- and SIL-IS-version

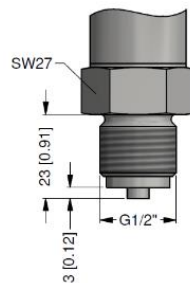


\* with electrical connection Bayonet MIL-C-26482 (10-6) increases the length of devices by 5 mm

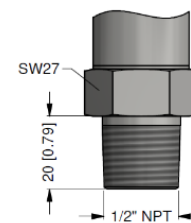
## Mechanical connections (dimensions mm / in)



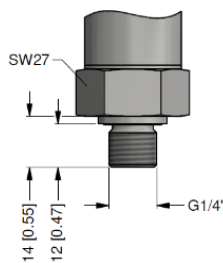
G1/2" DIN 3852



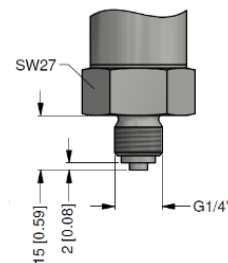
G1/2" EN 837



1/2" NPT



G1/4" DIN 3852



G1/4" EN 837

↕ metric threads and other versions on request

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## Ordering code DMP 333

DMP 333



<b>Pressure</b>											
gauge	1	3	0								
absolute	1	3	1								
<b>Input</b>											
[bar]											
100				1	0	0	3				
160				1	6	0	3				
250				2	5	0	3				
400				4	0	0	3				
600				6	0	0	3				
customer				9	9	9				consult	
<b>Output</b>											
4 ... 20 mA / 2-wire									1		
0 ... 20 mA / 3-wire									2		
0 ... 10 V / 3-wire									3		
intrinsic safety 4 ... 20 mA / 2-wire									E		
SIL2 4 ... 20 mA / 2-wire									1S		
SIL2 with Intrinsic safety 4 ... 20 mA / 2-wire									ES		
customer									9	consult	
<b>Accuracy</b>											
standard:	0.35 % FSO								3		
option 1:	0.25 % FSO								2		
option 2:	0.10 % FSO <sup>1</sup>								1		
customer									9	consult	
<b>Electrical connection</b>											
male and female plug ISO 4400									1	0	0
male plug Binder series 723 (5-pin)									2	0	0
cable outlet with PVC cable (IP67) <sup>2</sup>									T	A	0
cable outlet, cable with ventilation tube (IP68) <sup>3</sup>									T	R	0
male plug M12x1 (4-pin) / metal									M	1	0
Bayonet MIL-C-26482 (10-6); 2 wire									B	G	0
Bayonet MIL-C-26482 (10-6); 3 wire									B	G	4
compact field housing									8	5	0
stainless steel 1.4301 (304)									9	9	9
customer									9	9	9
<b>Mechanical connection</b>											
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
1/2" NPT									N	0	0
customer									9	9	9
<b>Seals</b>											
FKM									1		
EPDM <sup>4</sup>									3		
customer									9		
<b>Special version</b>											
standard									0	0	0
customer									9	9	9
											consult

<sup>1</sup> not in combination with SIL

<sup>2</sup> standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 ... 70 °C); others on request

<sup>3</sup> code TR0 = PVC cable, cable with ventilation tube available in different types and lengths

<sup>4</sup> possible for nominal pressure ranges  $p_N \leq 160$  bar