



DMP 457

Pressure Transmitter for Shipbuilding and Offshore

Stainless Steel Sensor

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

Nominal pressure

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

Output signals

2-wire: 4 ... 20 mA others on request

Special characteristics

- LR-certificate (Lloyd's Register)
- DNV•GL Type Approval (Det Norske Veritas • Germanischer Lloyd)
- ABS-certificate (American Bureau of Shipping)
- CCS-certificate (China Classification Society)
- flush pressure portG 1/2" from 100 mbar
- excellent thermal behaviour

Optional versions

- IS-version
 Ex ia = intrinsically safe for gases and dusts
- welded pressure port

The pressure transmitter DMP 457 has been especially designed for rough conditions occurring especially in shipbuilding and offshore applications. All gaseous and liquid media, which are compatible with stainless steel 1.4404 (316L) respectively can be used.

Sensor element is a piezoresistive stainless steel sensor with high accuracy and excellent long-term stability. In order to meet the special requirements for shipbuilding and offshore applications extensive tests had to be passed to get the Lloyd's Register (LR), Det Norske Veritas • Germanischer Lloyd (DNV•GL) and China Classification Society (CCS) approvals.

Preferred areas of use are

Diesel engines, drives Compressors, pumps



Hydraulic and pneumatic control systems



Fuel and oil















Input pressure range 1														
Nominal pressure gauge	[bar]	-1 0	0.10	0.16	0.25	0.4	0	0.60	1	1.6	2.5	4	6	
Nominal pressure abs.	[bar]	-	-	-	-	0.4	0	0.60	1	1.6	2.5	4	6	
Level gauge / abs.	[mH ₂ O]	-	1	1.6	2.5	4	_	6	10		25	40	60	
Overpressure	[bar]	5	0.5	1	1	2	_	5	5	10	10	20	40	
Burst pressure ≥	[bar]	7.5	1.5	1.5	1.5	3		7.5	7.5	5 15	15	25	50	
Nominal prosoure gauge	[horl	10	16	25	40	.	60		100	160	250	400	600	
Nominal pressure gauge Nominal pressure abs.	[bar]	10	16 16	25 25	40		60 60	-	100	160 160	250 250	400	600	
	[bar]													
Level gauge / abs.	[mH ₂ O]	100	160	250	400		-		-	-	- 4000	- 4000	-	
Overpressure	[bar]	40	80 120	80	10:		210	_	600	600	1000	1000	1000	
Burst pressure >	[bar]	50	1	120	210		420		1000	1000	1250	-	-	
Vacuum resistance $p_N \ge 1$ bar: unlimited vacuum resistance $p_N \le 1$ bar: on request ¹ from 60 bar: measurement starts with ambient pressure														
Trom 60 bar. measurement stans with ambient pressure														
Output signal / Supply														
Standard		2-wire:	4 20 r	mA /	V _S = 8	32 V	DC							
Option IS-version		2-wire: $4 \dots 20 \text{ mA}$ / $V_S = 8 \dots 32 V_{DC}$ 2-wire: $4 \dots 20 \text{ mA}$ / $V_S = 10 \dots 28 V_{DC}$												
Performance														
Accuracy ²		standard	d: nominal	pressure	e < 0.4 ba	ır: ≤±	0.5	% FS	0					
		standard: nominal pressure < 0.4 bar: ≤ ± 0.5 % FSO nominal pressure ≥ 0.4 bar: ≤ ± 0.35 % FSO												
		option:	nominal	pressure	e ≥ 0.4 ba	ır: ≤ ±	0.25	% FS	0					
Permissible load														
Influence effects		supply: 0.05 % FSO / 10 V												
		load:		FSO / kΩ										
Long term stability		≤ ± 0.1 % FSO / year by reference conditions												
Response time		< 10 ms												
² accuracy according to IEC (is, repe	atabili	ity)						
Thermal effects (Offset	and Spar	n) / Permi	ssible ter	nperatur	es									
Nominal pressure p _N	[bar]		-1	0				< 0.4				≥ 0.40		
Tolerance band	[% FSO]		≤ ± 0.75			≤±1					≤ ± 0.75			
in compensated range	[°C]		-20	85				0 70)		-:	20 85		
Permissible temperatures	;	medium			-40 1									
electronics / environment: -40 85°C storage: -40 100°C														
Electrical protection		storage:			-40 10	00 C								
Electrical protection		T	4											
Short-circuit protection	permanent													
Reverse polarity protection			no damage, but also no function emission and immunity according to											
Electromagnetic compatibility en			n and imm 31326	инну асс	orung to									
			•GL (Det N	Norske V	eritas • G	erman	nische	er Llov	d)					
Mechanical stability			,_ ,_ ,,					,	,					
Vibration		4 g (acc	ording to [ONV•GI	class B	curve :	2 / hs	sis: IF	C 6006	8-2-6)				
Materials		+ g (acc	ording to L	JIV OL.	oldoo D,	oui ve i	2 / 50	2010. IL	.0 0000	0 2 0)				
Pressure port		etainless	s steel 1.4	404 (316	1 \									
Housing		standard			inless ste	ا 1 امد	404 (3161 \						
riousing			ı. eld housin				,	,	with ca	ble gland				
Cable sheath		TPE -U	ciu riousiii								ance again	st oil and	nasolina	
Cable Sileatii		11 2 -0			istant ag						ance again	ist on and t	jasoniic,	
Seals (media wetted)		standard	d:	FK			, .		,	.,,				
		option:			 Ided vers	ion ³					0	thers on re	quest	
Diaphragm		stainless steel 1.4435 (316L)												
Media wetted parts		pressure port, seals, diaphragm												
· ·	essure port	• •	•			al press	sure ra	anges p	N ≤ 40 ba	ar				
³ welded version only with pressure ports according to EN 837; possible for nominal pressure ranges p _N ≤ 40 bar Category of the environment														
Lloyd's Register (LR)		EMV1, E	MV2, EM	V3, EMV	4					numb	er of certifi	cate: 13/20	0055	
Det Norske Veritas •		tempera		,		D					number of certificate: TAA00001GR			
Germanischer Lloyd (DNV•GL)		humidity: B												
	,	vibration				В								
			i. nagnetic co	ompatibil	itv.	В								
		enclosu	J	patibil	٠,٠	ח								

D

enclosure:



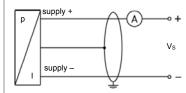
Evaluation protection							
Explosion protection							
Approvals	IBExU 10 ATEX 1068 X						
DX19-DMP 457	zone 0: II 1G Ex ia IIB T4 Ga						
	zone 20: II 1D Ex ia IIIC T 85°C Da						
Safety technical maximum values	$U_i = 28 \text{ V}, I_i = 93 \text{ mA}, P_i = 660 \text{ mW}, L_i \approx 0 \mu\text{H}$						
	with field housing: $C_i = 105 \text{ nF}$						
	with cable outlet: C _i = 84.7 nF						
	with ISO 4400: C _i = 62.2 nF						
	the supply connections have an inner capacity of max. 90 nF (140 nF with field housing) to the housing						
Permissible temperatures for	in zone 0: -20 60 °C with p _{atm} 0.8 bar up to 1.1 bar						
environment .	in zone 1 or higher: -20 70 °C						
Connecting cables	cable capacitance: signal line/shield also signal line/signal line: 160 pF/m						
(by factory)	cable inductance: signal line/shield also signal line/signal line: 1μH/m						
Miscellaneous							
Current consumption	max. 25 mA						
Weight	approx. 140 g (with ISO 4400)						
Installation position	any ⁴						
Operational life	100 million load cycles						
CE-conformity	EMC Directive: 2014/30/EU						
	Pressure Equipment Directive: 2014/68/EU (module A) ⁵						
ATEX Directive	2014/34/EU						

⁴ 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 for pressure ranges $p_N \le 1$ bar.

⁵ This directive is only valid for devices with maximum permissible overpressure > 200 bar

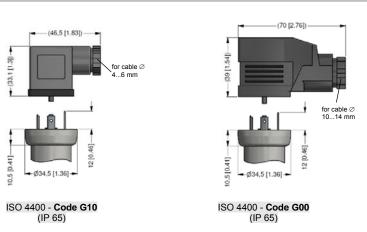
Wiring diagram

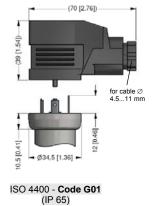
2-wire-system (current)



Pin configuration							
Electrical connection	1SO 4400	field housing (clamp section: 2.5 mm²) V _{S+} V _{S-} S+ GND	cable colours (IEC 60757)				
Supply +	1	VS+	WH (white)				
Supply –	2	VS-	BN (brown)				
Shield	ground pin 😩	GND	GNYE (green-vellow)				

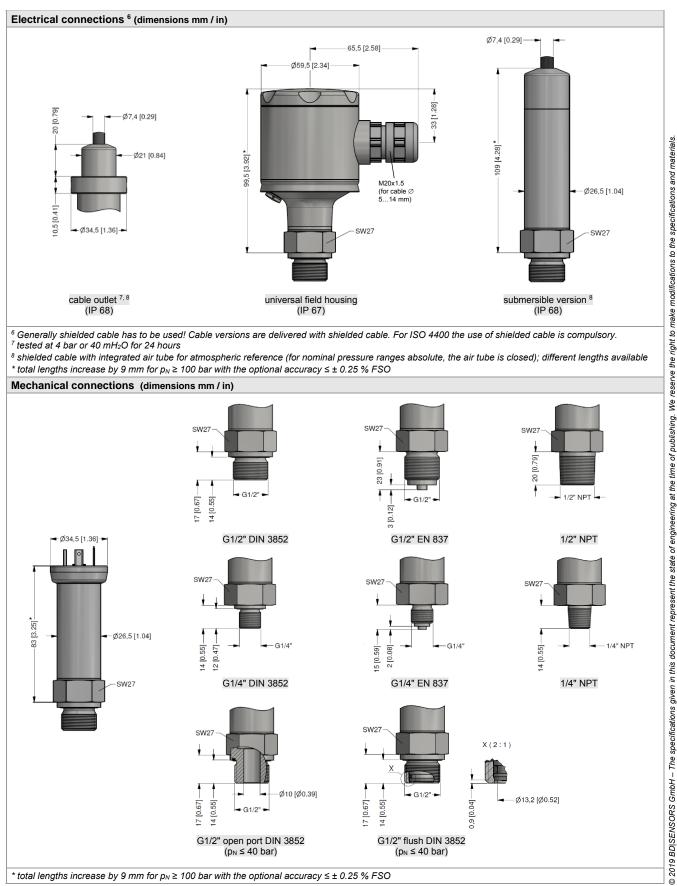
Electrical connections ⁶ (dimensions mm / in)





⁶ Generally shielded cable has to be used! Cable versions are delivered with shielded cable. For ISO 4400 the use of shielded cable is compulsory.

DMP 457



- ⁶ Generally shielded cable has to be used! Cable versions are delivered with shielded cable. For ISO 4400 the use of shielded cable is compulsory. ⁷ tested at 4 bar or 40 mH₂O for 24 hours
- ⁸ shielded cable with integrated air tube for atmospheric reference (for nominal pressure ranges absolute, the air tube is closed); different lengths available * total lengths increase by 9 mm for $p_N \ge 100$ bar with the optional accuracy $\le \pm 0.25$ % FSO

Mechanical connections (dimensions mm / in) SW27 20 [0.79] 23 [0.91] ► 1/2" NPT -14 [0.55] 17 [0.67] 3 [0.12] G1/2" DIN 3852 G1/2" EN 837 1/2" NPT - Ø34,5 [1.36] → SW27 [3.25] Ø26,5 [1.04] 14 [0.55]— 12 [0.47]— 83 2 [0.08] 15 [0.59]-14 [0.55] G1/4" DIN 3852 G1/4" EN 837 1/4" NPT SW27 X(2:1) 17 [0.67] 17 [0.67] Ø10 [Ø0.39] + G1/2" Ø13,2 [Ø0.52] 14 [0.55] -14 [0.55]-G1/2" open port DIN 3852 G1/2" flush DIN 3852 $(p_N \le 40 \text{ bar})$ * total lengths increase by 9 mm for $p_N \ge 100$ bar with the optional accuracy $\le \pm 0.25$ % FSO

DMP457_E_161219



Ordering code DMP 457 **DMP 457** Pressure in bar, gauge 6 0 0 in bar, absolute 2 6 0 1 6 0 2 6 0 3 in mH₂O, gauge ¹ in mH₂O, absolute ² [mH₂O] [bar] 1.0 0.10 1 0 0 0 0.16 6 0 0 1.6 2 5 4 0 0 0 2.5 0.25 4 0 0 0 6 0 0 0 1 0 0 1 1 6 0 1 4.0 0.40 6.0 0.60 10 1.0 1 6 2 5 4 0 6 0 1.6 16 0 25 2.5 1 40 40 1 6 0 0 1 1 0 0 2 1 6 0 2 2 5 0 2 4 0 0 2 6 0 0 2 1 0 0 3 1 6 0 3 60 6.0 100 10 160 16 and 250 25 400 40 60 100 160 2 5 0 3 4 0 0 3 6 0 0 3 X 1 0 2 9 9 9 9 250 400 600 -1 ... 0 customer consult Output 4 ... 20 mA / 2-wire 1 reserve the right to make intrinsic safety 4 ... 20 mA / 2-wire Ε customer consult standard for p_N ≥ 0,4 bar: 0.35 % FSO 3 standard for p_N < 0,4 bar: 0.50 % FSO option for $p_N \ge 0.4$ bar: 0.25 % FSO 2 9 customer consult Electrical connection male and female plug ISO 4400 We state of engineering at the time of publishing. 1 0 G (for cable Ø 4...6 mm) male and female plug ISO 4400 GL G 0 0 (for cable Ø 10...14 mm) male and female plug ISO 4400 GL 3 G 0 1 (for cable Ø 4,5...11 mm) cable outlet (TPE-U-cable) Т R 3 field housing stainless steel (316L) 8 8 0 submersible version (1.4404 / 316L) Τ. Т 3 with TPE-U-cable customer 9 9 9 consult Mechanical connection G1/2" DIN 3852 0 0 0 0 0 0 0 0 1 G1/2" EN 837 2 G1/4" DIN 3852 3 G1/4" EN 837 4 G 1/2" DIN 3852 with F 0 0 flush sensor 5 G1/2" DIN 3852 open pressure port ⁵ 0 Н 0 1/2" NPT Ν 0 0 1/4" NPT Ν 4 0 given in this 9 9 9 customer consult without (welded version) © 2020 BD|SENSORS GmbH - The specifications customer 9 consult Special version standard 0 0 0 9 9 customer consult ¹ from 60 bar: measurement starts with ambient pressure ² absolute pressure possible from 0.4 bar

01.04.2020

³ cable socket is GL-approbated

⁴ shielded TPE-U-cable with ventilation tube available in different lengths

 $^{^{6}}$ welded version only with pressure ports according to EN 837; possible with pressure ranges $p_{N} \le 40$ bar