

DMP 457

Pressure Transmitter for Shipbuilding and Offshore

- ▶ piezoresistive stainless steel sensor
- ▶ accuracy:
0.175% / 0.125% FSO BFSL
(0.350% / 0.250% FSO IEC 60770)
- ▶ nominal pressure ranges
from 0 ... 100 mbar
up to 0 ... 600 bar

The pressure transmitter DMP 457 has been designed for rough conditions occurring especially in shipbuilding and offshore applications. All gaseous and liquid media, which are compatible with stainless steel 1.4571 (316Ti) respectively 1.4435 (316L) 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 Germanischer Lloyd (GL) and Det Norske Veritas (DNV) approvals.

A variety of standard output signals as well as mechanical and electrical connections make the DMP 457 covering a wide field of applications.

Typical areas of use for shipbuilding / offshore are:

- ▶ diesel engines
- ▶ gears
- ▶ compressors
- ▶ pumps
- ▶ boilers
- ▶ hydraulic and pneumatic controls
- ▶ elevators

- ▶ small thermal effect
- ▶ excellent linearity
- ▶ option: flush pressure port
- ▶ in preparation:
option Ex-version
TÜV 03 ATEX 2006 X
- ▶ customer specific versions:
 - special pressure ranges
 - other versions on request

Characteristics



DMP 457

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Technical Data

Input pressure range															
Nominal pressure gauge [bar]	-1 ... 0	0.1	0.16	0.25	0.4	0.6	1	1.6	2.5	4	6	10	16	25	40
Nominal pressure abs. [bar]	-	0.1	0.16	0.25	0.4	0.6	1	1.6	2.5	4	6	10	16	25	40
Permissible overpressure [bar]	3	1	1	1	1	3	3	6	6	20	20	60	60	60	100
Nominal pressure gauge ¹ [bar]	60		100			160			250			400			600
Nominal pressure abs. [bar]	60		100			160			250			400			600
Permissible overpressure [bar]	140		340			340			600			600			1000

Output signal / Supply		
Standard	2-wire: 4 ... 20 mA / $V_s = 12 \dots 36 V_{DC}$ (rated: 24 V_{DC})	Ex-protection ² : $V_s = 14 \dots 28 V_{DC}$

Performance			
Accuracy	standard:	nominal pressure > 0.4 bar:	IEC 60770 ³
	option:	nominal pressure > 0.4 bar:	BFSL
Permissible load	$R_{max} = [(V_s - V_{smin}) / 0.02] \Omega$		
Influence effects	supply:	0.05 % FSO / 10 V	
	load:	0.05 % FSO / k Ω	
Long term stability	$\leq \pm 0.1$ % FSO / year		
Response time	< 5 ms		

Thermal errors (Offset and Span)						
Nominal pressure P_N [bar]	-1 ... 0	≤ 0.1	≤ 0.25	≤ 0.4	≤ 1.0	> 1.0
Tolerance band [% FSO]	$\leq \pm 0.75$	$\leq \pm 2.0$	$\leq \pm 1.5$	$\leq \pm 1.0$	$\leq \pm 1.0$	$\leq \pm 0.75$
TC, average [% FSO / 10 K]	± 0.07	± 0.3	± 0.2	± 0.14	± 0.1	± 0.07
in compensated range [°C]	0 ... 70		0 ... 50			0 ... 70

Electrical protection	
Reverse polarity protection	no damage, but also no function
Electromagnetic compatibility	emission and immunity according to - EN 61326 - Germanischer Lloyd (GL) - Det Norske Veritas (DNV)
Option Ex-protection only with 4 ... 20 mA / 2-wire DX13-DMP 457 ²	zone 0 ⁴ : II 1 G EEx ia IIC T4 zone 20: II 1 D T 85°C safety technical maximum values: $V_i = 28 V$, $I_i = 93 mA$, $P_i = 660 mW$, $C_i \leq 1nF$, $L_i \leq 10 \mu H$

Permissible temperatures		
Medium	-25 ... 125 °C	
Electronics / environment	-25 ... 80 °C	Ex-protection: application in zone 0: -20 ... 60 °C application in zone 1 or higher: -25 ... 70 °C
Storage	-40 ... 100 °C	

¹ measurement starts with ambient pressure

² in preparation

³ accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)

⁴ approved for atmospheric pressure from 0.8 bar up to 1.1 bar

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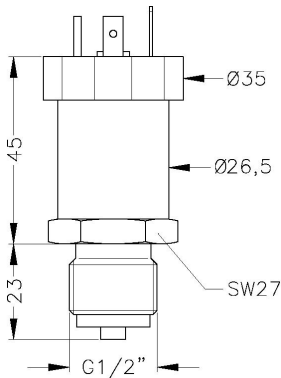
Technical Data

Mechanical stability

Vibration 4 g (5 ... 100 Hz)

Mechanical connection

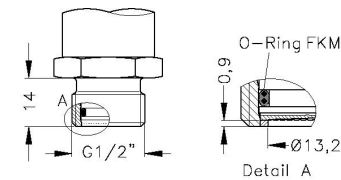
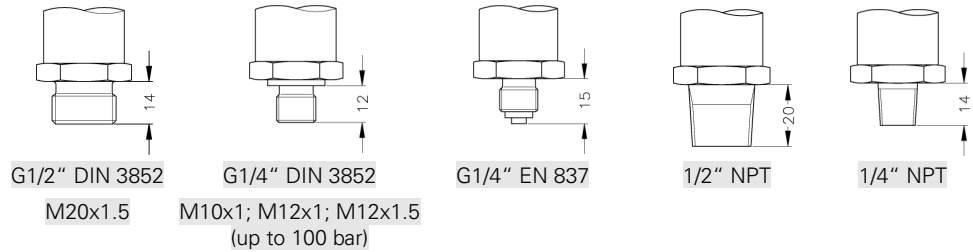
Standard



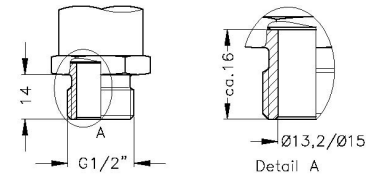
G1/2" EN 837

M20x1.5

Optional



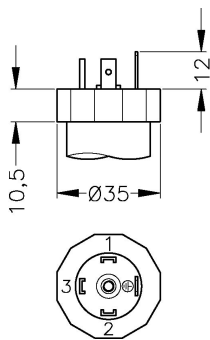
G1/2" flush DIN 3852
(up to 40 bar)⁵



G1/2" open port DIN 3852
(up to 40 bar)

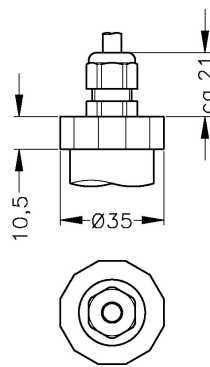
Electrical connection⁶

Standard

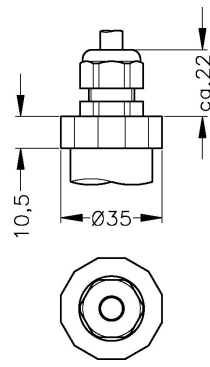


DIN 43650 (IP 65)

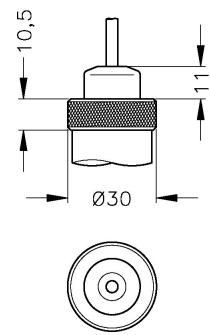
Optional



Cable gland (IP 67)
cable without air tube



Cable gland (IP 67)
cable with air tube



Cable outlet (IP 68)
cable without or with
air tube⁷

⁵ not possible for vacuum ranges

⁶ Generally shielded cable has to be used! Cable versions are delivered with shielded cable. For DIN 43650 the use of shielded cable is compulsory.

⁷ tested at 4 bar or 40 mWC for 24 hours

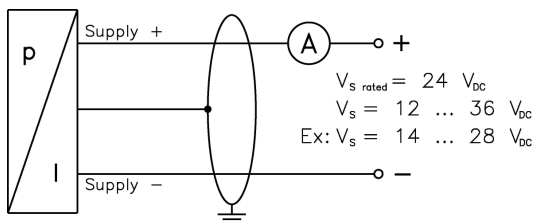
Materials	
Pressure port	stainless steel 1.4571 (316Ti)
Housing	stainless steel 1.4301 (304)
Seals (media wetted)	standard: $P_N \leq 40$ bar: FKM / $P_N > 40$ bar: NBR option: welded version for pressure ports according to EN 837 with pressure ranges P_N between 0.25 bar and 25 bar others on request
Diaphragm	stainless steel 1.4435 (316L)
Media wetted parts	pressure port, seals, diaphragm

Miscellaneous			
Cable capacitance ⁸	cable without air tube:	signal line/shield: 160 pF/m	signal line/signal line: 120 pF/m
	cable with air tube:	signal line/shield: 150 pF/m	signal line/signal line: 100 pF/m
Cable inductance ⁸	cable without air tube:	signal line/shield: 0.65 μ H/m	signal line/signal line: 0.65 μ H/m
	cable with air tube:	signal line/shield: 1.0 μ H/m	signal line/signal line: 1.0 μ H/m
Current consumption	max. 25 mA		
Weight	approx. 140 g		
Installation position	any ⁹		
Operation life	> 100 x 10 ⁶ cycles		

Pin configuration			
Electrical connection		DIN 43650	Cable colours ⁸ (DIN 47100)
2-wire-system	Supply +	1	white
	Supply -	2	brown
	Ground	ground pin	yellow / green (shield)

Wiring diagram

2-wire-system (current)



⁸ if the electrical connection is a mounted cable by factory

⁹ Pressure transmitters are calibrated in a vertical position with the pressure connector down. If this position is changed on installation there can be slight deviations in the zero point for pressure ranges $P_N \leq 1$ bar.

Ordering Code DMP 457

DMP 457



Pressure																	
	gauge ¹	6 0 0															
	absolute	6 0 1															
Input																	
	[bar]																
	0,10		1	0	0	0											
	0,16		1	6	0	0											
	0,25		2	5	0	0											
	0,40		4	0	0	0											
	0,60		6	0	0	0											
	1,0		1	0	0	1											
	1,6		1	6	0	1											
	2,5		2	5	0	1											
	4,0		4	0	0	1											
	6,0		6	0	0	1											
	10		1	0	0	2											
	16		1	6	0	2											
	25		2	5	0	2											
	40		4	0	0	2											
	60		6	0	0	2											
	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											
	-1 ... 0		X	1	0	2											
	customer		9	9	9	9											
Output																	
	4 ... 20 mA / 2-wire						1										
	Intrinsic safety 4 ... 20 mA / 2-wire						E										
	customer						9										
Accuracy																	
	standard for $P_N > 0,4$ bar	0,35 %					3										
	standard for $P_N \leq 0,4$ bar	0,50 %					5										
	option for $P_N > 0,4$ bar	0,25 %					2										
	customer						9										
Electrical connection																	
	Male and female plug DIN 43650 ²						G	1	0								
	Male and female plug DIN 43650 GL ^{2,3}						G	0	0								
	Cable gland incl. Cable ^{2,4,5}						4	0	0								
	Cable outlet ^{2,4}						T	R	0								
	customer						9	9	9								
Mechanical connection																	
	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								
	G1/2" DIN 3852 with ^{6,7}						F	0	0								
	flush sensor																
	G1/2" DIN 3852 open pressure port ⁶						H	0	0								
	1/2" NPT						N	0	0								
	1/4" NPT						N	4	0								
	customer						9	9	9								
Seals																	
	for $P_N \leq 40$ bar	FKM								1							
	without (welded version) ⁸									2							
	for $P_N > 40$ bar	NBR								5							
	customer									9							
Special version																	
	standard									0	0	0					
	customer									9	9	9					

¹ measurement starts with ambient pressure
² Shielded cable has to be used! Cable versions are delivered with shielded cable.
 For DIN 43650 the use of shielded cable is compulsory.
³ female plug DIN is GL-approved
⁴ different cable types and lengths deliverable
⁵ standard: 2 m PVC cable without ventilation tube, optionally cable with ventilation tube
⁶ G1/2" flush and G1/2" open port only up to 40 bar
⁷ G1/2" flush not possible for vacuum ranges
⁸ welded version only with pressure ports according to EN 837; not possible with pressure ranges ≤ 0.16 bar and > 25 bar

This ordering code contains product specification, properties are not guaranteed. Subject to change without notice.