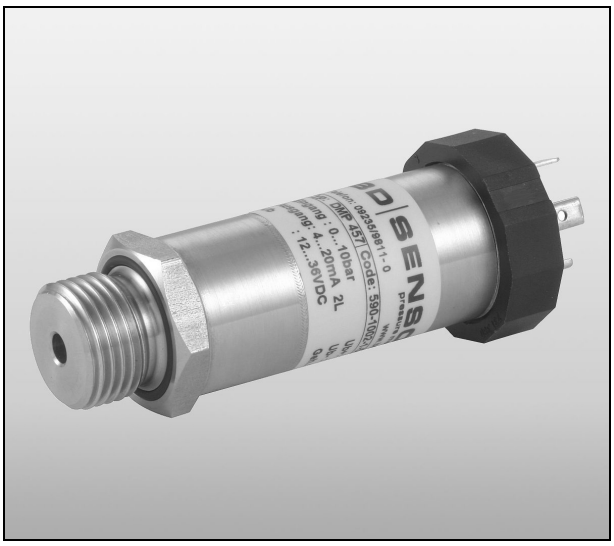

DMP 457

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

Characteristics

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

DMP 457
Transmitter for Shipbuilding and Offshore

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DMP 457

Transmitter for Shipbuilding and Offshore

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
Level gauge / abs.	[mH_2O]	-	1	1.6	2.5	4	6	10	16	25	40	60	100	160	250	400
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 ... 36 V_{DC} (rated: 24 V_{DC})	Ex-protection	V_S = 14 ... 28 V_{DC}

Performance

Accuracy		IEC 60770 [2]	BFSL
	standard: nominal pressure > 0.4 bar:	≤ ± 0.35 % FSO	≤ ± 0.175 % FSO
	nominal pressure ≤ 0.4 bar:	≤ ± 0.50 % FSO	≤ ± 0.250 % FSO
	option: nominal pressure > 0.4 bar:	≤ ± 0.25 % FSO	≤ ± 0.125 % FSO
Permissible load	$R_{max} = [(V_S - V_{S\,min}) / 0.02]\ \Omega$		
Influence effects	supply: 0.05 % FSO / 10 V load: 0.05 % FSO / kΩ		
Long term stability	≤ ± 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]	≤ ± 0.75	≤ ± 2.0	≤ ± 1.5	≤ ± 1.0	≤ ± 1.0	≤ ± 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 DX13-DMP 457	zone 0 [3]: II 1 G Ex ia IIC T4 zone 20: II 1 D Ex tD A20 IP65 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 µH

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

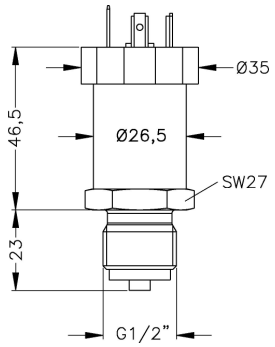
[3] approved for atmospheric pressure from 0.8 bar up to 1.1 bar

Mechanical stability

Vibration	4 g (according to GL: curve 2 / according to DNV: class B / basis: IEC 60068-2-6)

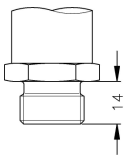
Mechanical connection (dimensions in mm)

Standard

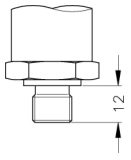


G1/2" EN 837
M20x1.5

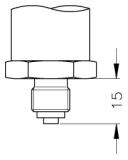
Options



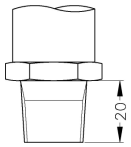
G1/2" DIN 3852
M20x1.5



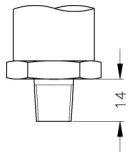
G1/4" DIN 3852
M10x1; M12x1; M12x1.5
(up to 100 bar)



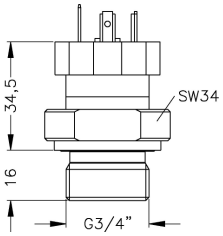
G1/4" EN 837



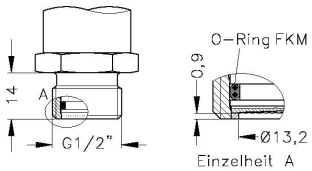
1/2" NPT



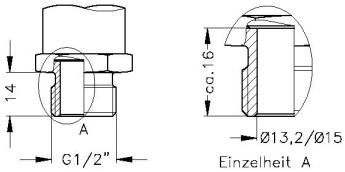
1/4" NPT



G3/4" DIN 3852
(up to 40 bar)



G1/2" flush DIN 3852
(up to 40 bar) [4]



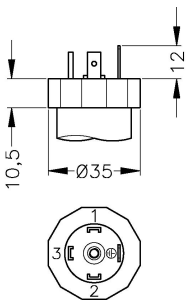
G1/2" open port DIN 3852
(up to 40 bar)

⇨ With nominal pressure ranges > 40 bar total length increases by approx. 10 mm (with field housing by 8 mm)!
⇨ With Ex-protection total length increases by 37 mm (no elongation with field housing)!

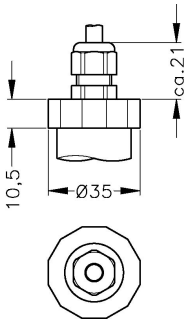
Electrical connection [5] (dimensions in mm)

Standard

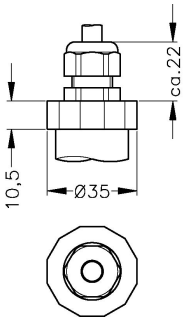
Optional



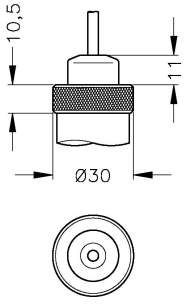
ISO 4400
(IP 65)



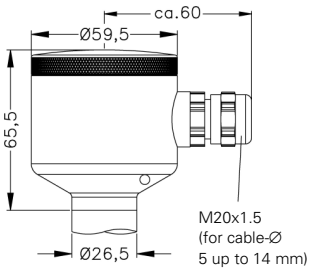
Cable gland
cable without air tube
(IP 67)



Cable gland
cable with air tube
(IP 67)



Cable outlet
cable with or without
air tube [6] (IP 68)



Field housing
(IP 67)

[4] not possible for vacuum ranges

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

[6] tested at 4 bar or 40 mH_2O for 24 hours

Materials

Pressure port	stainless steel 1.4571 (316Ti)
Housing	standard: stainless steel 1.4301 (304) option field housing: stainless steel 1.4404 (316L); with cable gland
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

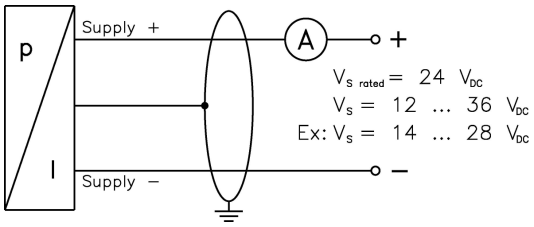
Optionally SIL 2 application	according to IEC 61508 / IEC 61511
Connecting cables (by factory)	cable capacitance: signal line/shield also signal line/signal line: 160 pF/m cable inductance: signal line/shield also signal line/signal line: 1 µH/m
Current consumption	max. 25 mA
Weight	approx. 140 g
Installation position	any [7]
Operation life	> 100 x 10^6 cycles

Pin configuration

Electrical connection		ISO 4400	Field housing	Cable colours (DIN 47100)
2-wire-system	Supply + Supply –	1 2	IN + IN -	white brown
	Ground	ground pin	⏚	yellow / green (shield)

Wiring diagram

2-wire-system (current)



[7] 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.

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BD|SENSORS® pressure measurement

Ordering code DMP 457

DMP 457 ☐☐☐-☐☐☐☐-☐-☐-☐☐☐-☐☐☐-☐-☐☐☐

Pressure							
in bar, gauge [1]	600						
in bar, absolute	601						
in mH_2O, gauge [1]	602						
in mH_2O, absolute	603						
Input [mH_2O] [bar]							
1 / 0,10		1000					
1,6 / 0,16		1600					
2,5 / 0,25		2500					
4 / 0,40		4000					
6 / 0,60		6000					
10 / 1,0		1001					
16 / 1,6		1601					
25 / 2,5		2501					
40 / 4,0		4001					
60 / 6,0		6001					
100 / 10		1002					
160 / 16		1602					
250 / 25		2502					
400 / 40		4002					
60		6002					
100		1003					
160		1603					
250		2503					
400		4003					
600		6003					
-1 ... 0		X102					
customer		9999					on request
Output							
4 ... 20 mA / 2-wire			1				
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				on request
Accuracy							
standard for P_N > 0,4 bar 0,35 %				3			
standard for P_N ≤ 0,4 bar 0,50 %				5			
option for P_N > 0,4 bar 0,25 %				2			
customer				9			on request
Electrical connection							
Male and female plug ISO 4400 [2] (for cable ∅ 4...6 mm)					G10		
Male and female plug ISO 4400 GL [2, 3] (for cable ∅ 10...14 mm)					G00		
Male and female plug ISO 4400 GL [2, 3] (for cable ∅ 4,5...11 mm)					G01		
Cable gland incl. cable [2, 4, 5]					400		
Cable outlet [2, 4]					TR0		
Field housing stainless steel					880		
customer					999		on request
Mechanical connection							
G1/2" DIN 3852						100	
G1/2" EN 837						200	
G1/4" DIN 3852						300	
G1/4" EN 837						400	
G3/4" DIN 3852 [6]						K00	
G1/2" DIN 3852 with flush sensor [6, 7]						F00	
G1/2" DIN 3852 open pressure port [6]						H00	
1/2" NPT						N00	
1/4" NPT						N40	
customer						999	on request

Seals			
for P_N ≤ 40 bar FKM	1		
without (welded version) [8]	2		
for P_N > 40 bar NBR	5		
customer	9		on request
Special version			
standard		000	
customer		999	on request

[1] from 60 bar: measurement starts with ambient pressure
[2] Shielded cable has to be used! Cable versions are delivered with shielded cable. For ISO 4400 the use of shielded cable is compulsory.
[3] female plug is GL-approbated
[4] different cable types and lengths deliverable
[5] standard: 2 m PVC cable without ventilation tube, optionally cable with ventilation tube
[6] possible 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.

TÜV CERT DIN EN ISO 9001

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