



DMP 457



Pressure Transmitter for Shipbuilding and Offshore

- ▶ piezoresistive stainless steel sensor
- ▶ accuracy acc. to IEC 60770: 0.35 / 0.25 % FSO
- ▶ nominal pressure ranges from 0 ... 40 mbar up to 0 ... 600 bar

The pressure transmitter DMP 457 has been designed for rough conditions occurring especially in shipbuilding and offshore applications.

Sensor element is a piezoresistive stainless steel sensor with high accuracy and excellent long term stability.

All gaseous and liquid media, which are compatible with stainless steel 1.4571 (316Ti) respectively 1.4435 (316L) and FKM, can be used.

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.

Typical areas of use for shipbuilding / offshore are:

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

- ▶ small thermal effect
- ▶ excellent linearity
- ▶ accuracy acc. to IEC 60770: 0.35 % FSO option: 0.25 % FSO
- ▶ option: flush pressure port
- ▶ option Ex: II 1 G EEx ia IIC T4 (TÜV 03 ATEX 2006 X)
- ▶ customer specific versions:
 - special pressure ranges
 - other versions on request

Characteristics



DMP 457

Transmitter for Shipbuilding and Offshore

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Input pressure range ¹																	
Nominal pressure gauge [bar]	-1 ... 0	0.04	0.06	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	0.2	0.2	0.5	0.5	1	1	3	3	6	6	20	20	20	60	60	100
Nominal pressure gauge ² [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} ³

Performance			
Accuracy ⁴	standard:	≤ ± 0.35 % FSO	BFSL: ≤ ± 0.175 % FSO
	pressure ≤ 0.4 bar:	≤ ± 0.5 % FSO	BFSL: ≤ ± 0.25 % FSO
	option (pressure > 0.4 bar):	≤ ± 0.25 % FSO	BFSL: ≤ ± 0.125 % FSO
Permissible load	R _{max} = [(V _S - V _{S min}) / 0.02] Ω		
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	
Isolation resistance	> 100 MΩ
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 DXL3-DMP 457	II 1 G EEx ia IIC T4 safety technical maximum values: U _i = 28 V, I _i = 93 mA, P _i = 660 mW

Permissible temperatures	
Medium	-25 ... 125 °C
Electronics / environment	-25 ... 80 °C
Storage	-40 ... 125 °C

¹ welded version is not possible for pressure ranges ≤ 0.16 bar and > 25 bar

² measurement starts with ambient pressure

³ Ex-approved transmitter power supply necessary matching the safety technical maximum values (see "Electrical protection") and working with supply voltage V_S from at least 18 to 31.2 V_{DC} (for example model 90271-F41EE-G011 from CEAG Apparatebau Hundsbach GmbH & Co. KG – part of Cooper Crouse-Hinds, see www.ceag.de)

⁴ accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)

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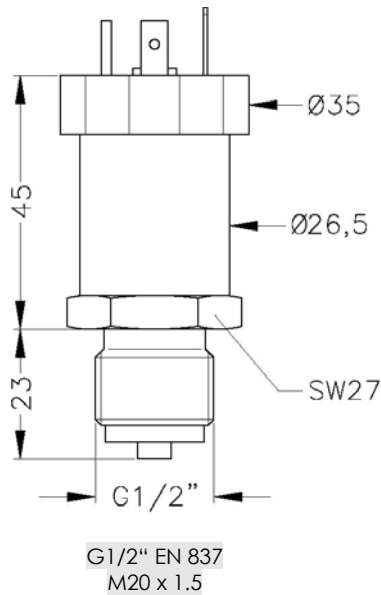
Technical Data

Mechanical stability

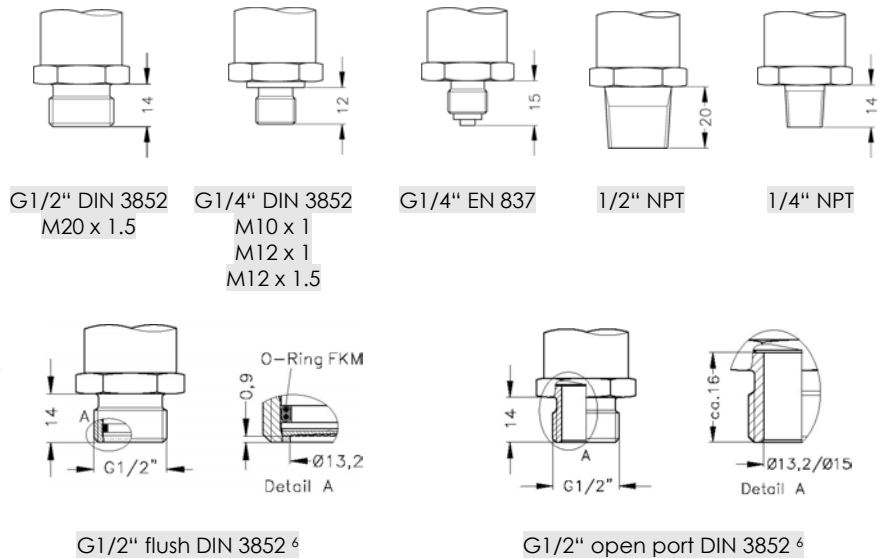
Vibration 4 g (5 ... 100 Hz)

Mechanical connection ⁵

Standard



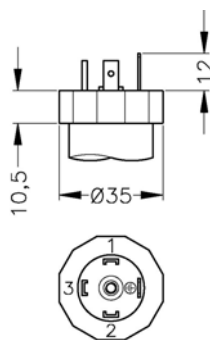
Optional



- ⇒ Nominal pressure > 40 bar: total length increases by 14 mm!
- ⇒ Ex-protection: total length increases by 26.5 mm!
- ⇒ Ex-protection and nominal pressure > 40 bar: total length increases by 40.5 mm!

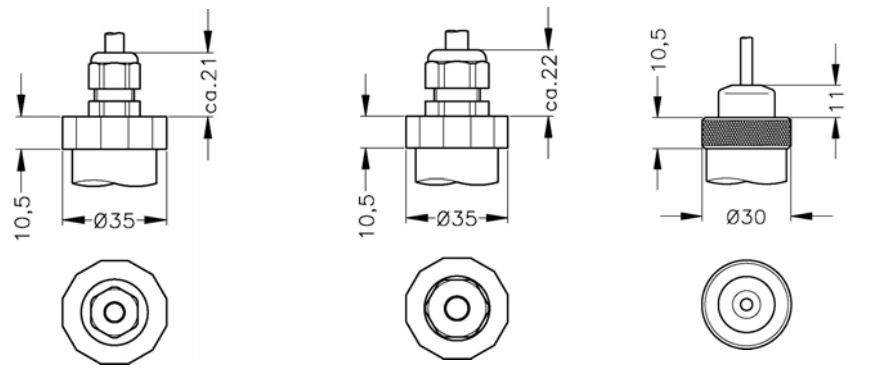
Electrical connection ⁷

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 ⁸)
cable without or with air tube

⁵ welded version only for pressure ports according to EN 837; not for pressure ranges ≤ 0.16 bar and > 25 bar

⁶ G1/2" flush or G1/2" open port only up to 40 bar

⁷ Generally shielded cable has to be used! Cable versions are delivered with shielded cable. For DIN 43650 the use of shielded cable is compulsory.

⁸ tested at 4 bar or 40 mWC for 24 hours

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Technical Data

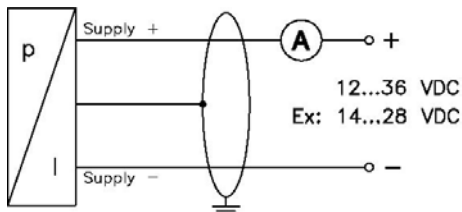
Materials	
Pressure port	stainless steel 1.4571 (316Ti)
Housing	stainless steel 1.4301 (304)
Seals (media wetted)	standard: $P_N \leq 40$ bar: FKM $P_N > 40$ bar: NBR optional: welded version ⁹ others on request
Diaphragm	stainless steel 1.4435 (316L)
Media wetted parts	pressure port, seals, diaphragm

Miscellaneous	
Current consumption	max. 25 mA
Weight	approx. 140 g
Installation position	any ¹⁰
Operation life	$> 100 \times 10^6$ cycles

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

Wiring diagram

2-wire-system (current)



⁹ welded version only for pressure ports according to EN 837; not possible for pressure ranges ≤ 0.16 bar and > 25 bar

¹⁰ 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 $P_N < 1$ bar.