DMP 457

Pressure Transmitter For Shipbuilding And Offshore

Stainless Steel Sensor

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

DMP 457 Shipbuilding and Offshore

Nominal pressure

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

Output signals

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

Special characteristics

- ► shipping approvals
  GL (Germanischer Lloyd) and
  DNV (Det Norske Veritas)
- ► **flush pressure port**
  G 1/2" from 100 mbar
- ► excellent
  thermal characteristic

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 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.

Preferred areas of use are

Shipbuilding and Offshore

Diesel Engines
Drives
Compressors
Pumps
Boiler
Hydraulic and Pneumatic Control Systems

Fuel and Oil

Input pressure range											
Nominal pressure gauge [bar]	-1 ... 0	0.10	0.16	0.25	0.40	0.60	1	1.6	2.5	4	6
Nominal pressure abs. [bar]	-	0.10	0.16	0.25	0.40	0.60	1	1.6	2.5	4	6
Level gauge / abs. [mH_2O]	-	1	1.6	2.5	4	6	10	16	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	15	15	25	50
Nominal pressure gauge [1] [bar]	10	16	25	40	60	100	160	250	400	600	
Nominal pressure abs. [bar]	10	16	25	40	60	100	160	250	400	600	
Level gauge / abs. [mH_2O]	100	160	250	400	-	-	-	-	-	-	
Overpressure [bar]	40	80	80	105	210	600	600	1000	1000	1000	
Burst pressure ≥ [bar]	50	120	120	210	420	1000	1000	1250	-	-	
Vacuum resistance	$P_N \geq 1$ bar: unlimited vacuum resistance $P_N < 1$ bar: on request										
[1] *from 60 bar: measurement starts with ambient pressure*											

Output signal / Supply	
Standard	2-wire: 4 ... 20 mA / V_S = 8 ... 32 V_{DC}
Option IS-protection	2-wire: 4 ... 20 mA / V_S = 10 ... 28 V_{DC}
Performance	
Accuracy [2]	Standard: Nominal pressure < 0.4 bar: ≤ ± 0.5 % FSO Nominal pressure ≥ 0.4 bar: ≤ ± 0.35 % FSO Option: Nominal pressure ≥ 0.4 bar: ≤ ± 0.25 % 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 by reference conditions
Response time	< 10 msec
[2] *accuracy according to IEC 60770 ---- limit point adjustment (non-linearity, hysteresis, repeatability)*	

Thermal effects (Offset and Span) / Permissible temperatures			
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 ... 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 - Germanischer Lloyd (GL) - Det Norske Veritas (DNV)
Mechanical stability	
Vibration	4 g (according to GL: curve 2 / according to DNV: Class B / basis: IEC 60068-2-6)
Materials	
Pressure port	stainless steel 1.4404 (316L)
Housing	standard: stainless steel 1.4404 (316L) option field housing: stainless steel 1.4404 (316L), with cable gland

Cable sheath	for cable outlet	for submersible version	permissible temperatures
	PVC - cable	PVC - probe cable	-5 ... 70 °C
	PUR - cable	PUR - probe cable	-25 ... 70 °C
		FEP - probe cable	-25 ... 70 °C
		TPE - probe cable	-25 ... 125 °C

Seals (media wetted)	standard: FKM option: NBR welded version[3] others on request
Diaphragm	stainless steel 1.4435 (316L)
Media wetted parts	pressure port, seals, diaphragm
[3] *welded version only with pressure ports according to EN 837; possible for nominal pressure ranges $P_N \leq 40$ bar*	

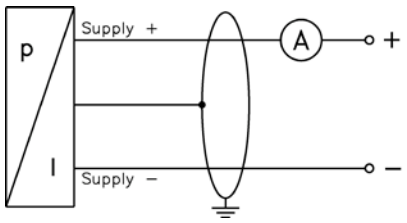
IS-protection			
Approval DX 19-DMP 457	IBExU10ATEX1068X	zone 0: II 1G Ex ia IIB T4 Ga	zone 20: II 1D Ex ia D 20 T85 °C
Safety technical maximum values	U_i = 28 V, I_i = 93 mA, P_i = 660 mW, C_i = 105 nF, L_i = 5 µH		
Permissible temperatures for environment	in zone 0: -20 ... 60 °C bei p_{atm} 0.8 bar bis 1.1 bar in zone 1 or higher: -25 ... 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 µH/m		

Miscellaneous	
Current consumption	max. 25 mA
Weight	approx. 140 g (with ISO 4400)
Installation position	any [4]
Operational life	> 100 x 10^6 pressure cycles
CE-confomity	EMC Directive: 2004/108/EC Pressure Equipment Directive: 97/23/EC (module A) [5]
ATEX-directive	94/9/EC

[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 $P_N \leq 1$ bar.
[5] This directive is only valid for devices with maximum permissible overpressure > 200 bar

Wiring diagram

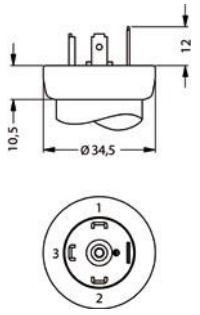
2-wire-system (current)



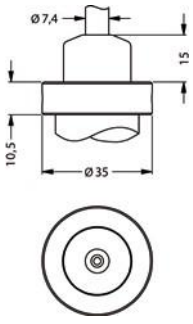
Pin configuration

Electrical connection	ISO 4400	field housing	cable colours (DIN 47100)
Supply + Supply ---	1 2	IN + IN –	WH (white) BN (brown)
Shield	ground pin	⏚	GNYE (green / yellow)

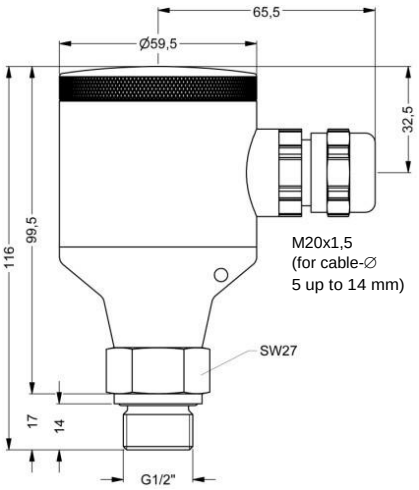
Electrical connections [6] (dimensions in mm)



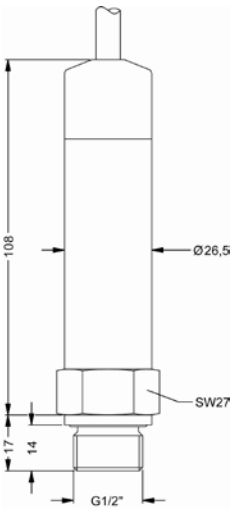
ISO 4400
(IP 65)



cable outlet
cable with air tube [7, 8] (IP 68)



compact field housing (IP 67)

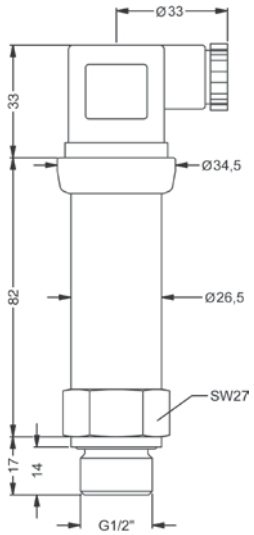


submersible version (IP 68) [8]

[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 mH_2O for 24 hours
[8] different cable types and lengths available,permissible temperature depends on kind of cable, see cable connection

Mechanical connection (dimensions in mm)

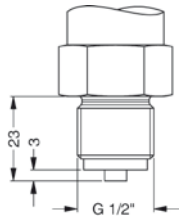
Standard



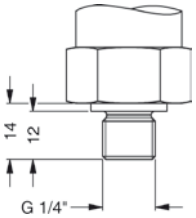
G1/2" DIN 3852

⇨ **for nominal pressure P_N > 400 bar increases the length of devices with IS-vesion by 19 mm and of devices without IS-version by 39 mm**

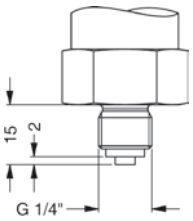
Option



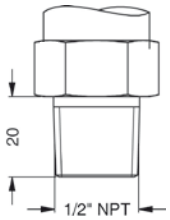
G1/2" EN 837



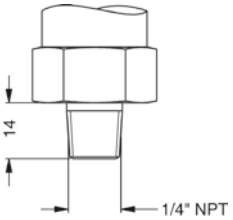
G1/4" DIN 3852



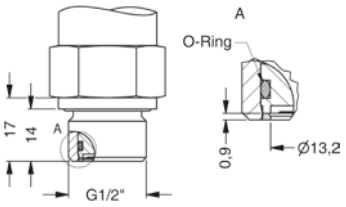
G1/4"EN 837



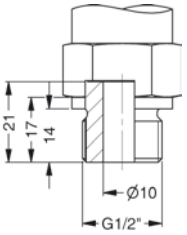
1/2" NPT



1/4" NPT



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



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

Ordering code DMP 457

DMP 457 ☐☐☐-☐☐☐☐-☐-☐-☐☐☐-☐☐☐-☐-☐☐☐

Pressure		Code	
in bar, gauge [1]		6 0 0	
in bar, absolute		6 0 1	
in mH_2O, gauge [1]		6 0 2	
in mH_2O, absolute		6 0 3	

Input [mH_2O]	[bar]	Code	
1	0.1	1 0 0 0	
1.6	0.16	1 6 0 0	
2.5	0.25	2 5 0 0	
4	0.4	4 0 0 0	
6	0.6	6 0 0 0	
10	1	1 0 0 1	
16	1.6	1 6 0 1	
25	2.5	2 5 0 1	
40	4	4 0 0 1	
60	6	6 0 0 1	
100	10	1 0 0 2	
160	16	1 6 0 2	
250	25	2 5 0 2	
400	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	consult

Output	Code	
4 ... 20 mA / 2-wire	1	
Intrinsic safety 4 ... 20 mA / 2-wire	E	
customer	9	consult

Accuracy		Code	
standard for $P_N \geq 0{,}4$ bar	0.35 %	3	
standard for $P_N < 0{,}4$ bar	0.50 %	5	
oPtion for $P_N \geq 0{,}4$ bar	0.25 %	2	
customer		9	consult

Electrical connection	Code	
Male and female plug ISO 4400 [2] (for cable ∅ 4...6 mm)	G 1 0	
Male and female plug ISO 4400 GL [2, 3] (for cable ∅ 10...14 mm)	G 0 0	
Male and female plug ISO 4400 GL [2, 3] (for cable ∅ 4,5...11 mm)	G 0 1	
Cable outlet [2, 4]	T R 0	
Field housing stainless steel	8 8 0	
Submersible version (1.4404 / 316L)	T T 0	
customer	9 9 9	consult

Mechanical connection	Code	
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	
G 1/2" DIN 3852 with [5] flush sensor	F 0 0	
G1/2" DIN 3852 open pressure port [5]	H 0 0	
1/2" NPT	N 0 0	
1/4" NPT	N 4 0	
customer	9 9 9	consult

Seals	Code	
FKM	1	
NBR	5	
without (welded version) [6]	2	
customer	9	consult

Special version	Code	
standard	0 0 0	
customer	9 9 9	consult

[1] from 60 bar: measurement starts with ambient pressure
[2] Shielded cable has to be used! Cable versions are delivered with shielded cable.
[3] female plug is GL-approbated
[4] different cable types and lengths deliverable
[5] possible up to 40 bar
[6] welded version only with pressure ports according to EN 837; possible with pressure ranges $P_N \leqslant 40$ bar

SensorsONE
Pressure Measurement Instrumentation

Distributed by:

Cuvo Pumping Solutions, Inc.

16535 Hollister St., Ste. C
Houston TX 77066

888-368-8318 Toll Free
713-460-8828 Direct
713-460-8838 Fax

www.cuvopumpingsolutions.com