DMK 457

Pressure Transmitter For Shipbuilding And Offshore

Ceramic Sensor

accuracy according to IEC 60770: 0.5 % FSO

DMK 457 Shipbuilding and Offshore

Nominal pressure

from 0 ... 400 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)
- ► pressure port CuNiFe
  (sea water resistant)
- ► oxygen application

Optional versions

- ► IS-version
  Ex ia = intrinsically safe for
  gases and dusts

The pressure transmitter DMK 457 with ceramic sensor has been designed for hard conditions especially in shipbuilding and offshore applications as alternative to our pressure transmitter DMP 457 with piezoresistive stainless steel sensor.

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.

With mechanical versions G1/2" open port and G1/2" flush DIN 3852 the DMK 457 is especially suited for viscous, pasty or contaminated media due of the ceramic sensor.

Preferred areas of use are

Drives
Compressors
Boiler
Pneumatic Control Systems
Oxygen Applications

Fuel and Oil

Water and Sea Water

Input pressure range																		
Nominal pressure gauge [bar]	-1 … 0	0.4	0.6	1	1.6	2.5	4	6	10	16	25	40	60	100	160	250	400	600
Nominal pressure abs. [bar]	-	-	0.6	1	1.6	2.5	4	6	10	16	25	40	60	100	160	250	400	600
Level gauge / abs. [mH_2O]	-	-	6	10	16	25	40	60	100	160	250	400	600	-	-	-	-	-
Overpressure [bar]	4	1	2	2	4	4	10	10	20	40	40	100	100	200	400	400	600	800
Burst pressure ≥ [bar]	7	2	4	4	5	5	12	12	25	50	50	120	120	250	500	500	650	880
Vacuum resistance	$P_N \geq 1$ bar: unlimited vacuum resistance $P_N < 1$ bar: on request																	

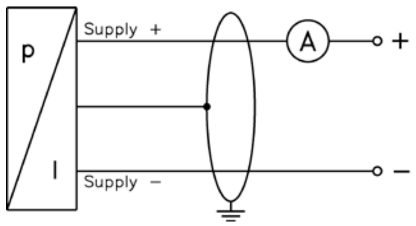
Output signal / Supply			
Standard	2-wire: 4 ... 20 mA / V_S = 8 ... 32 V_{DC}		
Option IS-protection	2-wire: 4 ... 20 mA / V_S = 10 ... 28 V_{DC}		
Performance			
Accuracy[1]	IEC 60770: ≤ ± 0.5 % FSO		
Permissible load	$R_{max} = [(V_S - V_{S\ min}) / 0.02\ A]\ \Omega$		
Influence effects	supply: 0.05 % FSO / 10 V load: 0.05 % FSO / kΩ		
Response time	< 10 msec		
[1] *accuracy according to IEC 60770 ---- limit point adjustment (non-linearity, hysteresis, repeatability)*			
Thermal effects (Offset and Span) / Permissible temperatures			
Thermal error	≤ ± 0.2 % FSO / 10 K in compensated range -25 ... 85 °C		
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	Standard: stainless steel 1.4404 (316L) option [2]: CuNi10Fe1Mn (sea water resistant) - for $P_N \leq 400$ bar with mech. connection G1/2" DIN 3852, G1/2" EN 837, G1/2" open port, G1/4" DIN 3852, G1/4" EN 837 in combination with housing in CuNi10Fe1Mn		
Housing	standard: stainless steel 1.4404 (316L) option [2]: CuNi10Fe1Mn (sea water resistant) - in combination with pressure port in CuNi10Fe1Mn 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, FFKM (only for $P_N \leq 100$ bar) others on request		
Diaphragm	ceramic Al_2O_3 96 %		
Media wetted parts	pressure port, seals, diaphragm		
[2] *IS-version on request*			
IS-protection (only for 4 ... 20 mA / 2-wire)			
Approval DX19-DMK 457	IBExU10ATEX1068X Zone 0: II 1 G Ex ia IIB T4 Ga Zone 20 : II 1 D Ex iaD 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 media temperature	in zone 0: -20 ... 60 °C with p_{atm} 0.8 bar up to 1.1 bar in zone 1 or higher: -20 ... 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	
Option oxygen application	for $P_N \leq 25$ bar: O-ring in special material with oxygen approval (FKM)
Current consumption	max. 25 mA
Weight	approx. 140 g (with ISO 4400)
Installation position	any
Operational life	> 100 x 10^6 pressure cycles
CE-conformity	EMC Directive: 2004/108/EC Pressure Equipment Directive: 97/23/EC (module A) [3]
ATEX-directive	94/9/EC

[3] This directive is only valid for devices with maximum permissible overpressure > 200 bar

Wiring diagram

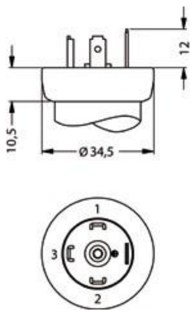
2-wire-system (current)



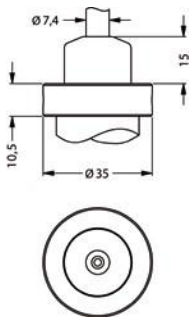
Pin configuration

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

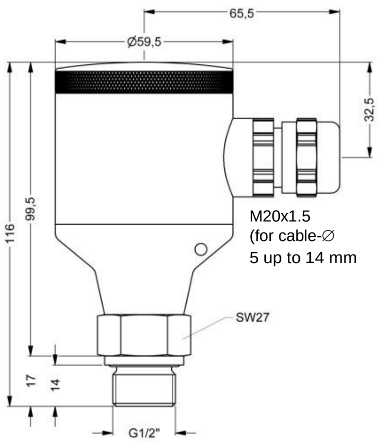
Electrical connections [4] (dimensions in mm)



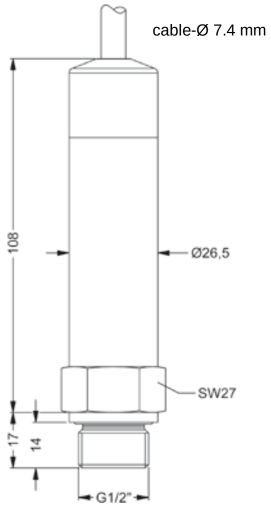
ISO 4400
(IP 65)



cable outlet
cable with air tube [5,6] (IP 68)



universal field housing (IP 67)

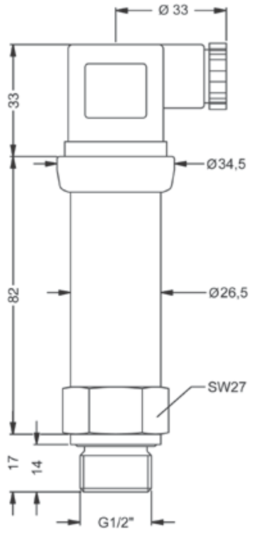


submersible version (IP 68) [6]

[4] Generally shielded cable has to be used! Cable versions are delivered with shielded cable. For ISO 4400 the use of shielded cable is compulsory.
[5] tested at 4 bar or 40 mH_2O for 24 hours
[6] different cable types and lengths available, permissible temperature depends on kind of cable, see cable connection

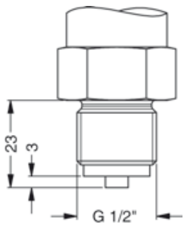
Mechanical connection **(dimensions in mm)**

Standard

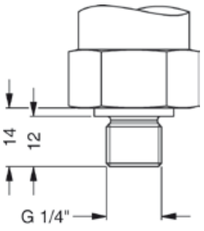


G1/2" DIN 3852

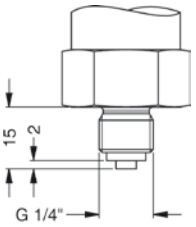
Option



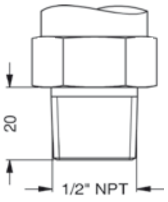
G1/2" EN 837



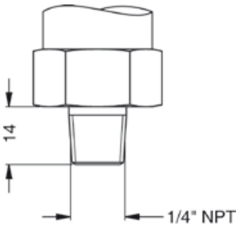
G 1/4" DIN 3852



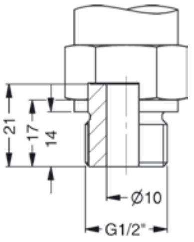
G1/4" EN 837



1/2" NPT



1/4" NPT



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

Ordering code DMK 457

DMK 457 ☐☐☐-☐☐☐☐-☐-☐-☐☐☐-☐☐☐-☐-☐-☐-☐☐☐

Pressure

in bar, gauge	5 9 0	
in bar, absolute	5 9 1	
in mH_2O, gauge	5 9 2	
in mH_2O, absolute	5 9 3	

Input

[mH_2O]	[bar]		
4	0.4	4 0 0 0	
6	0.6	6 0 0 0	
10	1.0	1 0 0 1	
16	1.6	1 6 0 1	
25	2.5	2 5 0 1	
40	4.0	4 0 0 1	
60	6.0	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	
600	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

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

Accuracy

0.5 %	5	
customer	9	consult

Electrical connection

Male and female plug ISO 4400 (for cable ∅ 4...6 mm)	G 1 0	
Male and female plug ISO 4400 GL [1, 2] (for cable ∅ 10...14 mm)	G 0 0	
Male and female plug ISO 4400 GL [1, 2] (for cable ∅ 4.5...11 mm)	G 0 1	
Cable outlet [1, 3]	T R 0	
Field housing stainless steel	8 8 0	
Submersible version (1.4404 / 316L)	T T 0	
Submersible version (CuNiFe)	T S 0	
customer	9 9 9	consult

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 open pressure port	H 0 0	
1/2" NPT	N 0 0	
1/4" NPT	N 4 0	
customer	9 9 9	consult

Seals

	FKM	1	
	FFKM [4]	7	
option	NBR	5	
	customer	9	consult

Pressure port

Stainless steel 1.4404 (316L)	1	
Copper-Nickel-alloy (CuNi10Fe1Mn) [5]	K	
customer	9	consult

Diaphragm

Ceramics Al_2O_3 96%	2	
customer	9	consult

Special version

standard	0 0 0	
oxygen application [6]	0 0 7	
customer	9 9 9	consult

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[1] Shielded cable has to be used! Cable versions are delivered with shielded cable.

[2] female plug is GL-approbated

[3] different cable types and lengths deliverable, permissible temperature depends on kind of cable

[4] only for P_N ≤ 100 bar possible

[5] optionally for nominal pressure ranges up to 400 bar and mechanical connections G1/2" DIN 3852, G1/2" EN 837, G1/2" open port, G1/4" DIN 3852, G1/4" EN837 in combination with housing in CuNi10Fe1Mn

[6] oxygen application with FKM seal possible up to 25 bar

This price list contains product specification; properties are not guaranteed. Detailed information about options are defined in the datasheet. Subject to change without notice.

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