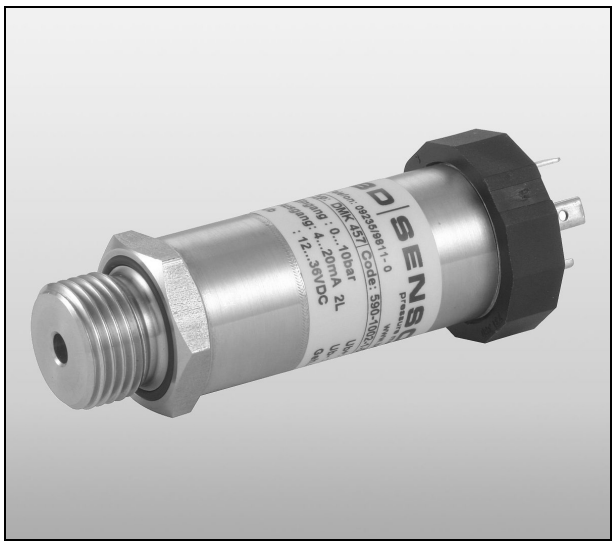
BD SENSORS
pressure measurement



DMK 457

Pressure Transmitter for Shipbuilding and Offshore

- ceramic sensor
- accuracy:
  0.25 % FSO BFSL
  (0.50 % FSO IEC 60770)
- nominal pressure ranges
  from 0 ... 0.6 bar
  up to 0 ... 600 bar

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.

Typical areas of use for shipbuilding/ offshore are:

- gears
- compressors
- boilers
- pneumatic controls
- elevators
- oxygen applications

Characteristics

- small thermal effect
- good long-term stability
- option: oxygen application
- in preparation:
  option Ex: II 1 G EEx ia IIC T4
  (TÜV 03 ATEX 2006 X)
- customer specific versions:
  - special pressure ranges
  - other versions on request

DMK 457
Transmitter for Shipbuilding and Offshore

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Input pressure range

Nominal pressure gauge	[bar]	-1...0	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
Permissible overpressure	[bar]	3	3	3	7	7	12	12	25	50	50	120	120	250	500	500	600	750

Output signal / Supply

Standard	2-wire: 4 ... 20 mA / V_S = 12 ... 36 V_{DC} (rated: 24 V_{DC})	Ex-protection [1]:	V_S = 14 ... 28 V_{DC}

Performance

Accuracy	IEC 60770 [2]: ≤ ± 0.5 % FSO	BFSL: ≤ ± 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	
Response time	< 10 msec	

Thermal effects

Thermal error for offset and span	≤ ± 0.2 % FSO / 10 K
in compensated range	-25 ... 85 °C

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-DMK 457 [1]	zone 0 [3]: 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 µH

Mechanical stability

Vibration	4 g (5 ... 100 Hz)

Permissible temperatures

Medium	-25 ... 135 °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			

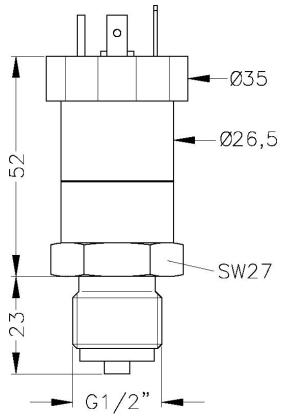
[1] in preparation

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

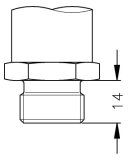
[3] approved for atmospheric pressure from 0.8 bar up to 1.1 bar

Mechanical connection

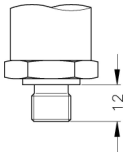
Standard **Optional**



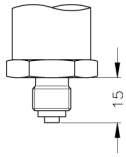
G1/2“ EN 837
M20x1.5



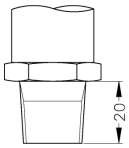
G1/2“ DIN 3852
M20x1.5



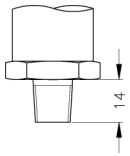
G1/4“ DIN 3852
M10x1; M12x1; M12x1.5
(up to 100 bar)



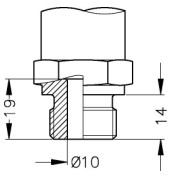
G1/4“ EN 837



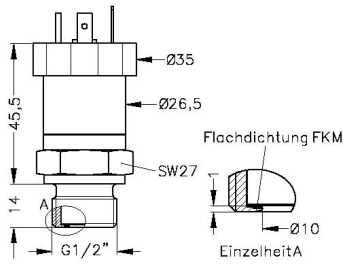
1/2“ NPT



1/4“ NPT



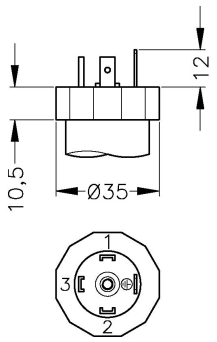
G1/2“ open port DIN 3852
(up to 100 bar)



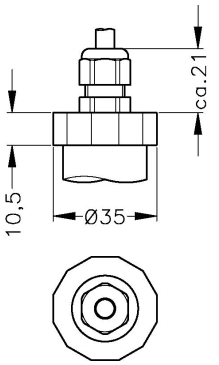
G1/2“ semi-flush DIN 3852
(up to 25 bar; nominal pressure abs. on request)

Electrical connection [4]

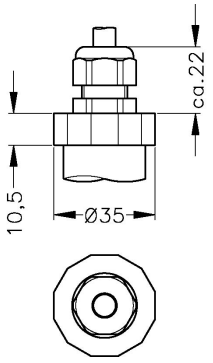
Standard **Options**



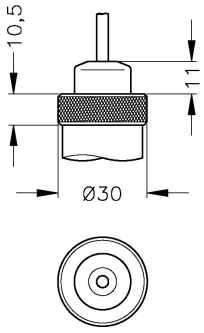
DIN 43650 (IP 65)



Cable gland (IP 67)
cable without air tube



Cable gland (IP 67)
cable with air tube



Cable outlet (IP 68)
cable with or without
air tube [5]

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

[5] tested at 4 bar or 40 mWC for 24 hours

Materials

Pressure port	standard: stainless steel 1.4571 (316Ti) option for nominal pressure up to 100 bar: CuNiFe (CuNi10Fe1Mn – sea water resistant) others on request
Housing	stainless steel 1.4301 (304) / CuNiFe
Seals (media wetted)	P_N < 100 bar: FKM P_N ≥ 100 bar: NBR others on request
Diaphragm	ceramics Al_2O_3 96 %
Media wetted parts	pressure port, seals, diaphragm

Miscellaneous

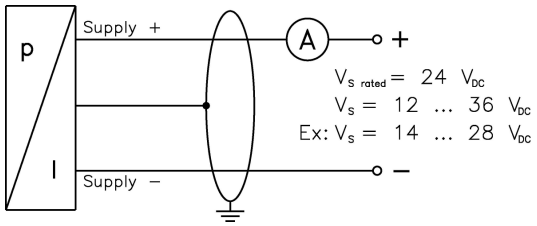
Optionally up to 160 bar: oxygen application	for $P_N \leq 50$ bar: O-ring in V747-75 (with BAM-approval); permissible maximum values are 40 bar / 130° C and 50 bar / 100° C for $P_N > 50$ bar: O-ring in FKM 90 (approved by the scientific coal research institute in Ostrava – CZ up to max. 95 °C and 215 bar)		
Cable capacitance [6]	cable without air tube: cable with air tube:	signal line/shield: 160 pF/m signal line/shield: 150 pF/m	signal line/signal line: 120 pF/m signal line/signal line: 100 pF/m
Cable inductance [6]	cable without air tube: cable with air tube:	signal line/shield: 0.65 µH/m signal line/shield: 1.0 µH/m	signal line/signal line: 0.65 µH/m signal line/signal line: 1.0 µH/m
Current consumption	max. 25 mA		
Weight	approx. 140 g		
Installation position	any		
Operational life	> 100 x 10^6 cycles		

Pin configuration

Electrical connection		DIN 43650	cable colours [6] (DIN 47100)
2-wire-system	Supply +	1	white
	Supply –	2	brown
	Ground	Ground pin	yellow / green (shield)

Wiring diagram

2-wire-system (current)



[6] if the electrical connection is a mounted cable by factory

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BD SENSORS pressure measurement

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Ordering Code DMK 457

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		Code
Pressure		
gauge		5 9 0
absolute		5 9 1
Input	[bar]	
	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		
	0,5 %	5
	customer	9
Electrical connection		
	Male and female plug DIN 43650 [1]	G 1 0
	Male and female plug DIN 43650 GL [1, 2]	G 0 0
	Cable gland incl. cable [1, 3, 4]	4 0 0
	Cable outlet incl. cable [1, 3]	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 flush sensor [5]	F 0 0
	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 < 100 bar	FKM	1
for P_N ≥ 100 bar	NBR	5
	customer	9
Pressure port		
	Stainless steel 1.4571 (316Ti)	1
	Copper-Nickel-alloy (CuNiFe) [7]	K
	customer	9
Diaphragm		
	Ceramics Al_2O_3 96%	2
	customer	9
Special version		
	standard	0 0 0
	oxygen application [8]	0 0 7
	customer	9 9 9

1 Shielded cable has to be used! Cable versions are delivered with shielded cable. For DIN 43650 the use of shielded cable is compulsory.
2 female plug is GL-approbated
3 different cable types and lengths deliverable
4 standard: 2 m PVC cable without ventilation tube, optionally cable with ventilation tube
5 G1/2" semi-flush DIN 3852 possible up to 25 bar; nominal pressure abs. on request
6 G1/2" open port DIN 3852 possible up to 100 bar
7 for P_N ≤ 100 bar
8 oxygen application possible up to 160 bar

TÜV CERT DIN EN ISO 9001

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