BD SENSORS®
pressure measurement

DMK 457

Pressure Transmitter for Shipbuilding and Offshore

Ceramic Sensor

accuracy according to EN IEC 62828-2:
0.5 % span

Nominal pressure

from 0 ... 400 mbar up to 0 ... 600 bar

Output signals

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

Special characteristics

- LR-certificate (Lloyd´s Register)
- DNV - Approval (Det Norske Veritas)
- ABS-certificate (American Bureau of Shipping)
- CCS-certificate (China Classification Society)
- pressure port in 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 typical applications in shipbuilding and offshore constructions as alternative to our pressure transmitter DMP 457 with piezoresistive stainless steel sensor.

In combination with the copper-nickel-alloy the DMK 457 is suitable for seawater, e.g. level measurement in ballast tanks, etc.

Preferred areas of use are

Drives
Compressors
Boiler
Pneumatic control systems
Oxygen applications

Fuel and oil#

Water and sea water

BD SENSORS s.r.o.
Hradišťská 817
CZ – 687 08 Buchlovice
Tel.: +420 572 411 011
www.bdsensors.cz
info@bdsensors.cz

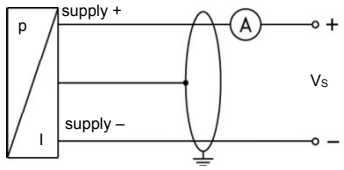
Input pressure range																			
Nominal pressure gauge [bar]	-1 … 0	0.4	0.6	1	1.6	2.5	4	6	10	16	25	40	60	100	160	250	400	600
Nominal pressure abs. [bar]	-	-	0.6	1	1.6	2.5	4	6	10	16	25	40	60	100	160	250	400	600
Level gauge / abs. [mH_2O]	-	-	6	10	16	25	40	60	100	160	250	400	600	-	-	-	-	-
Overpressure [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 ≥ 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-version	2-wire: 4 ... 20 mA / V_S = 10 ... 28 V_{DC}	
Performance		
Accuracy [1]	IEC 60770: ≤ ± 0.5 % span	
Permissible load	R_{max} = [(V_S – $V_{S\,min}$) / 0.02 A] Ω	
Influence effects	supply: 0.05 % span / 10 V load: 0.05 % span / kΩ	
Long term stability	≤ ± 0.3% span / year at reference conditions	
Response time	< 10 msec	
[1] accuracy according to EN IEC 62828-2– limit point adjustment (non-linearity, hysteresis, repeatability)		
Thermal effects (Offset and Span) / Permissible temperatures		
Thermal error	≤ ± 0.2 % span / 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 - DNV (Det Norske Veritas)	
Mechanical stability		
Vibration	4 g (according to DNV: class B, curve 2 / basis: IEC 60068-2-6)	
Materials		
Pressure port	Standard: stainless steel 1.4404 (316L) option [2]: CuNi10Fe1Mn (sea water resistant) - for p_N ≤ 400 bar with mechanical 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 (not with field housing) -	
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 (CuNi10Fe1Mn not possible)	
Cable sheath	TPE -U	(flame-resistant, halogen free, increased resistance against oil and gasoline, resistant against salt, sea water, heavy oil)
Seals (media wetted)	standard: FKM option: FFKM (only for p_N ≤ 100 bar)	others on request
Diaphragm	ceramic Al_2O_3 96 %	
Media wetted parts	pressure port, seals, diaphragm	
[2] IS-version on request		
Category of the environment		
Lloyd´s Register (LR) [3]	EMV1, EMV2, EMV3, EMV4	number of certificate: 13/20055
Det Norske Veritas (DNV)	temperature: D humidity: B vibration: B electromagnetic compatibility: B enclosure: D	number of certificate: TAA00001GR
[3] for p_N ≤ 160 bar		

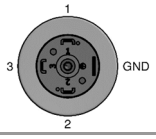
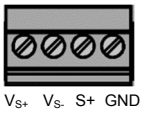
Explosion protection	
Approvals DX19-DMK 457	IBExU 10 ATEX 1122 X / IECEx IBE 12.0027X zone 0: II 1G Ex ia IIB T4 Ga zone 20: II 1D Ex ia IIIC T135 °C Da
Safety technical maximum values	U_i = 28 V, I_i = 93 mA, P_i = 660 mW, L_i ≈ 0 µH with field housing: C_i = 105 nF with cable outlet: C_i = 84.7 nF with ISO 4400: C_i = 62.2 nF the supply connections have an inner capacity of max. 90 nF (140 nF with field housing) to the housing
Permissible temperatures for environment	in zone 0: -20 ... 60 °C with p_{atm} 0.8 bar up to 1.1 bar in zone 1 or higher: -40/-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: 1µH/m
Miscellaneous	
Option oxygen application	for p_N ≤ 25 bar: O-ring in FKM Vi 567 (with BAM-approval) permissible maximum values are 25 bar/150° C
Current consumption	max. 25 mA
Weight	approx. 140 g (with ISO 4400)
Installation position	any
Operational life	100 million load cycles
CE-conformity	EMC Directive: 2014/30/EU Pressure Equipment Directive: 2014/68/EU (module A) [4]
ATEX-directive	2014/34/EU
[4] This directive is only valid for devices with maximum permissible overpressure > 200 bar	

Wiring diagram

2-wire-system (current)



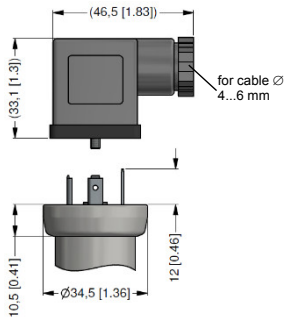
Pin configuration

Electrical connection	ISO 4400	field housing (clamp section: 2.5 mm²)	cable colours (IEC 60757)
			
Supply +	1	VS+	WH (white)
Supply –	2	VS-	BN (brown)
Shield	ground pin ⏚	GND	GNYE (green-yellow)

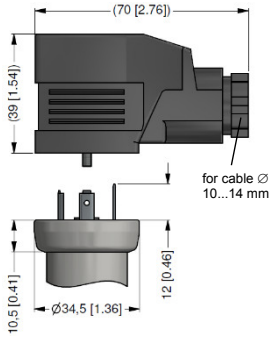
The manufacturer provides the EU declaration of conformity.

Calibration - All production undergoes output control, which is performed by comparison with standards. The traceability of standards and working gauges is ensured in accordance with Act No. 505/1990, as amended, on metrology.
The manufacturer offers the possibility to supply sensors calibrated in the calibration laboratory of BD SENSORS, accredited according to ČSN EN ISO / IEC 17025: 2018.

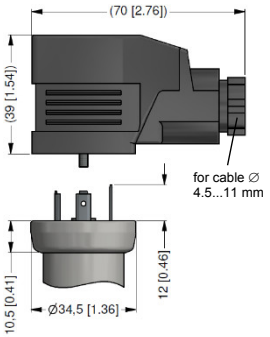
Electrical connections [5] (dimensions mm / in)



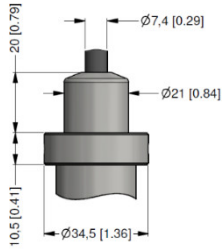
ISO 4400 - **Code G10**
(IP 65)



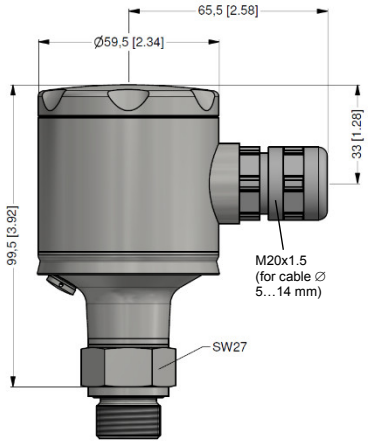
ISO 4400 - **Code G00**
(IP 65)



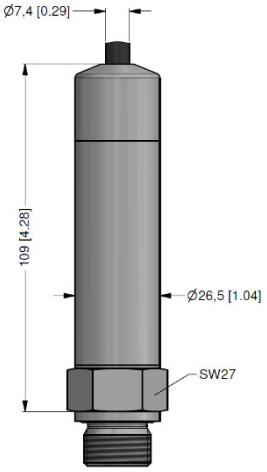
ISO 4400 - **Code G01**
(IP 65)



cable outlet [6, 7]
(IP 68)



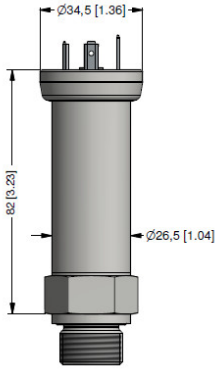
universal field housing
(IP 67)

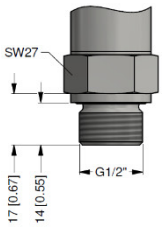


submersible version [7]
(IP 68)

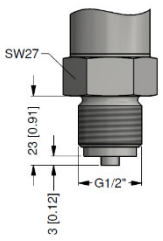
[5] *Generally shielded cable has to be used! Cable versions are delivered with shielded cable. For ISO 4400 the use of shielded cable is compulsory.*
[6] *tested at 4 bar or 40 mH$_2$O for 24 hours*
[7] *shielded cable with integrated air tube for atmospheric reference (for nominal pressure ranges absolute, the air tube is closed); different lengths available*

Mechanical connection (dimensions mm / in)

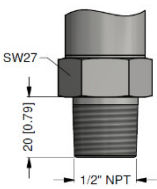




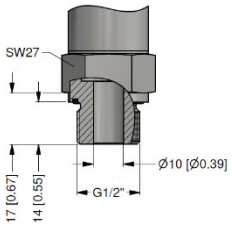
G1/2" DIN 3852



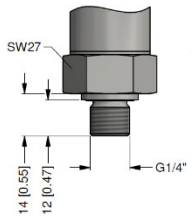
G1/2" EN 837



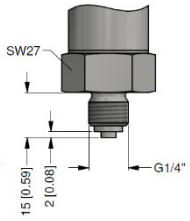
1/2" NPT



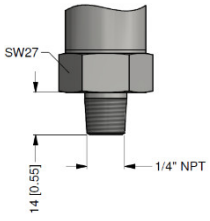
G1/2" open port
DIN 3852 (≤ 40 bar)



G1/4" DIN 3852



G1/4" EN 837



1/4" NPT

Tel.: +420 572 411 011 | www.bdsensors.cz
BD SENSORS® pressure measurement

BD SENSORS®
pressure measurement

Ordering code DMK 457

22.11.2022

DMK 457 - □□□□□ - □ - □ - □□□ - □□□ - □ - □ - □ - □□□

Pressure			
in bar, gauge			590
in bar, absolute [1]			591
Input	**[mH$_2$O]**	**[bar]**	
	0 … 4	0 … 0,4 [1]	4000
	0 … 6	0 … 0,6	6000
	0 … 10	0 … 1	1001
	0 … 16	0 … 1,6	1601
	0 … 25	0 … 2,5	2501
	0 … 40	0 … 4	4001
	0 … 60	0 … 6	6001
	0 … 100	0 … 10	1002
	0 … 160	0 … 16	1602
	0 … 250	0 … 25	2502
	0 … 400	0 … 40	4002
	0 … 600	0 … 60	6002
		0 … 100	1003
		0 … 160	1603
		0 … 250	2503
		0 … 400	4003
		0 … 600	6003
	-1 … 0	-1 … 0	X102
Customer			9999
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 ISO 4400 (female plug GL approbated, for cable Ø 4 … 6 mm)			G10
Male and female plug ISO 4400 (female plug GL approbated, for cable Ø 10 … 14 mm)			G00
Male and female plug ISO 4400 (female plug GL approbated) (for cable Ø 4,5 … 11 mm)			G01
Cable outlet / cable length specification needed (IP 68)[2]			TR3
+ TPE-U cable / 1 m			
Submersible version with TPE-U-cable (cable not included in price) [2]			TS3
'+ TPE-U cable / 1 m			
Customer			999
Mechanical connection			
G1/2" DIN 3852			100
G 1/2" EN 837			200
G1/4" DIN 3852			300
G1/4" EN 837			400
M 20 x 1,5 DIN 3852			500
M 20 x 1,5 EN 837			800
° G 1/2" DIN 3852 open port (P_N ≤ 40 bar)			H00
1/2" NPT			N00
1/4" NPT			N40
Customer			999
Seals			
Viton (FKM)			1
FFKM (only for P_N ≤ 100 bar)			7
Customer			9
Pressure port			
Stainless steel 1.4404 (316L)			1
Copper-nickel-alloy (CuNi10Fe1Mn) (only mech.con. H00) [3]			K
Customer			9
Diaphragm			
Ceramic Al_2O_3 96 %			2
Customer			9

BD SENSORS s.r.o.
Hradišťská 817
CZ – 687 08 Buchlovice
Tel.: +420 572 411 011
Fax: +420 572 411 497
www.bdsensors.cz
info@bdsensors.cz

Special version				
Standard	0	0	0	
Oxygen application (with FKM seal possible up to 25 bar)	0	0	7	
Customer	9	9	9	

0,-…without additional charge
On request...in accordance with the producer

Surcharges for calibration are not subject to any discounts. Subject to change.□
This document contains the specification for ordering the product; detailed technical parameters of the product and its possible variants are given in the data sheet.
BD SENSORS reserves the right to change sensor specifications without further notice.

1 absolute pressure possible from 0.6 bar
2 shielded TPE-U-cable with ventilation tube available in different lengths; cable not included in the price
3 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 (not with field housing)