

DMK 458

Pressure Transmitter for Marine and Offshore

Ceramic Sensor

accuracy according to IEC 60770:
standard: 0.25 % FSO
option: 0.1 % FSO



Nominal pressure

from 0 ... 40 mbar up to 0 ... 20 bar

Output signals

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

Product characteristics

- ▶ LR-certificate (Lloyd's Register)
- ▶ GL-certificate (Germanischer Lloyd)
- ▶ DNV-certificate (Det Norske Veritas)
- ▶ CCS-certificate (China Classification Society)
- ▶ high overpressure resistance
- ▶ excellent long term stability

Optionale Ausführungen

- ▶ IS-version
Ex ia= intrinsically safe for gases and dusts
- ▶ diaphragm Al₂O₃ 99.9 %
- ▶ pressure port CuNiFe

The pressure transmitter DMK 458 has been developed for marine and offshore applications. In addition to thread connections, different flush versions are available, which are especially suitable for pasty, viscous, and polluted media.

Due to the capacitive ceramic sensor developed by BD|SENSORS, which is optionally available in Al₂O₃ 99.9 %, the DMK 458 shows an outstanding accuracy as well as a high overload and temperature resistance.

Preferred areas of use are



Monitoring of pressure during loading and unloading processes



Monitoring of a ship's position and draught

Use in anti-heeling systems



Level measurement in ballast and storage tanks



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Transmitter for Marine and Offshore

Technical Data

Pressure ranges																	
Nominal pressure ¹	[bar]	0.04	0.06	0.1	0.16	0.25	0.4	0.6	1	1.6	2.5	4	6	10	16	20	
Level	[mH ₂ O]	0.4	0.6	1	1.6	2.5	4	6	10	16	25	40	60	100	160	200	
Overpressure	[bar]	2	2	4	4	6	6	8	8	15	25	25	35	35	45	45	
Permissible vacuum	[bar]	-0.2		-0.3		-0.5			-1								
¹ available in gauge, sealed gauge and absolute; nominal pressure ranges sealed gauge and absolute from 1 bar																	
Output signal / Supply																	
Standard	2-wire: 4 ... 20 mA / V _S = 9 ... 32 V _{DC}										V _{S rated} = 24 V _{DC}						
Option IS-version	2-wire: 4 ... 20 mA / V _S = 14 ... 28 V _{DC}										V _{S rated} = 24 V _{DC}						
Performance																	
Accuracy ²	standard: ≤ ± 0.25 % FSO										option: for P _N ≥ 0.6 bar ³ : ≤ ± 0.1 % FSO						
Permissible load	R _{max} = [(V _S - V _{S min}) / 0.02 A] Ω																
Long term stability	≤ ± 0.1 % FSO / year at reference conditions																
Influence effects	supply: 0.05 % FSO / 10 V										load: 0.05 % FSO / kΩ						
Turn-on time	700 msec																
Mean response time	< 200 msec										mean measuring rate 5/sec						
Max. response time	380 msec																
² accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)																	
³ Under the influence of disturbance burst according to EN 61000-4-4 (2004) 2 kV accuracy decreases on ≤ ± 0.25 % FSO.																	
Thermal effects																	
Thermal error	≤ ± 0.1 % FSO / 10 K in compensated range -20 ... 80 °C																
Permissible temperatures																	
Permissible temperatures	medium: -40 ... 125°C					electronics / environment: -25 ... 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 and Germanischer Lloyd (GL)																
Mechanical stability																	
Vibration	4 g (according to GL: curve 2 / basis: DIN EN 60068-2-6)																
Materials																	
Pressure port	standard: stainless steel 1.4404 (316 L) option for threaded connections: CuNi10Fe1Mn - on request																
Housing	stainless steel 1.4404 (316 L)																
Cable sheath for version cable outlet	TPE -U (flame-resistant, halogen free, increased resistance against oil and gasoline, resistant against salt, sea water, heavy oil)																
Cable gland for version field housing	absolute, sealed gauge: brass, nickel plated gauge: polyamide (with integrated pressure reference)										others on request						
Seals (media wetted)	FKM others on request																
Diaphragm	standard: ceramics Al ₂ O ₃ 96 % option: ceramics Al ₂ O ₃ 99.9 %																
Media wetted parts	pressure port, seals, diaphragm																
Category of the environment																	
Lloyd's Register (LR)	EMV1, EMV2, EMV3 ⁴ , EMV4										number of certificate: 13/20055						
Germanischer Lloyd (GL)	D, F, EMC 1 number of certificate: 75 012 - 09 HH																
Det Norske Veritas (DNV)	temperature: D					humidity: B					vibration: B					number of certificate: A-12144	
⁴ not valid for IS-version (DX14A-DMK 458)																	
IS protection																	
Approval DX14A-DMK 458	IBExU 07 ATEX 1180 X field housing zone 0: II 1G Ex ia IIC T4 ISO 4400, M12x1, cable outlet: zone 0: II 1G Ex ia IIB T4																
Safety technical maximum values	U _i = 28 V; I _i = 93 mA; P _i = 660 mW field housing: C _i = 52.3 nF; L _i = 5 μH; 90.2 nF opposite GND ISO 4400, M12x1, cable outlet: C _i = 105 nF; L _i = 5 μH; 140 nF opposite GND																
Permissible temperatures for environment	in zone 0: -20 ... 60 °C with p _{atm} 0.8 bar up to 1.1 bar zone 1 and higher: -25 ... 70 °C																
Permissible temperatures for medium	-40 ... 85 °C																
Miscellaneous																	
Ingress protection	IP65, IP 67, IP68																
Installation position	any																
Current consumption	max. 21 mA																
Weight	min. 400 g (depending on housing and mechanical connection)																
Operational life	> 100 x 10 ⁶ cycles																
CE conformity	EMC Directive: 2004/108/EC																
ATEX Directive	94/9/EC																

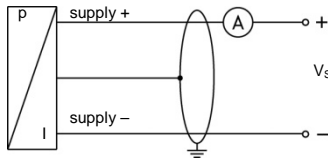
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Technical Data

Wiring diagram

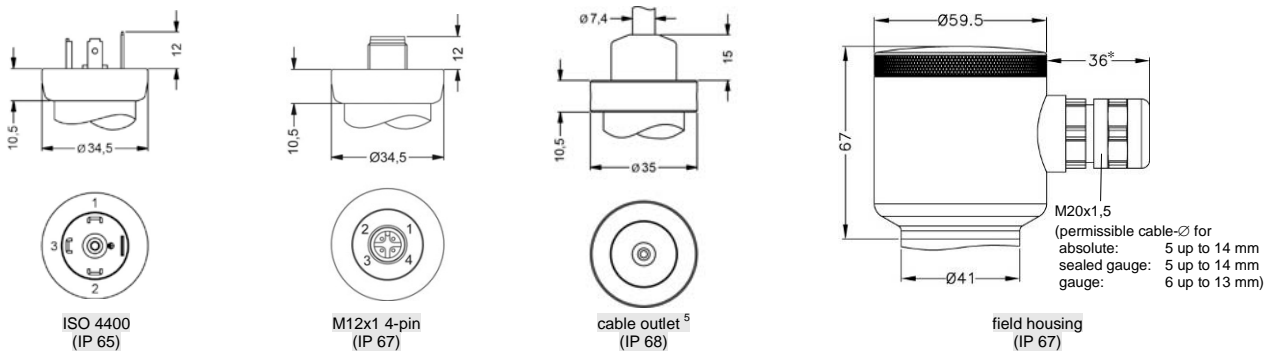
2-wire-system (current)



Pin configuration

Electrical connections	ISO 4400	field housing (clamp section: 2.5 mm ²)	M12x1 (4-pin) metal	cable colours (DIN 47100)
Supply +	1	VS+	1	wh (white)
Supply -	2	VS-	2	bn (brown)
Shield	ground contact		4	ye/gn (yellow / green)

Electrical connections (dimensions in mm)

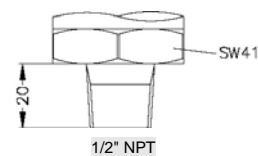
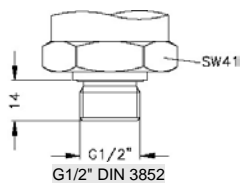
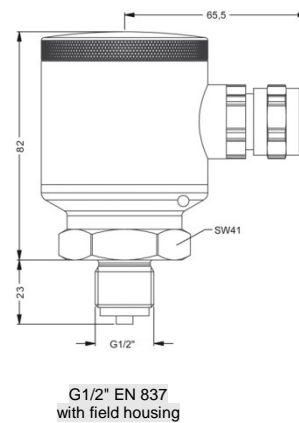
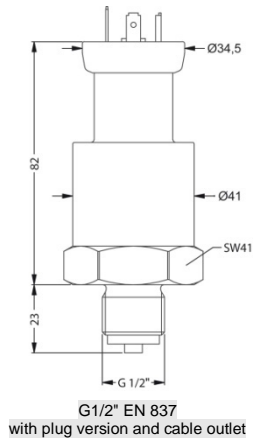


* for gauge pressure ranges with field housing the marked dimension increases by 8 mm

⁵ cable versions are delivered with shielded cable (different lengths available);
for gauge pressure cable with ventilation tube required; tested at 4 bar or 40 mH₂O for 24 hours

Dimensions (in mm)

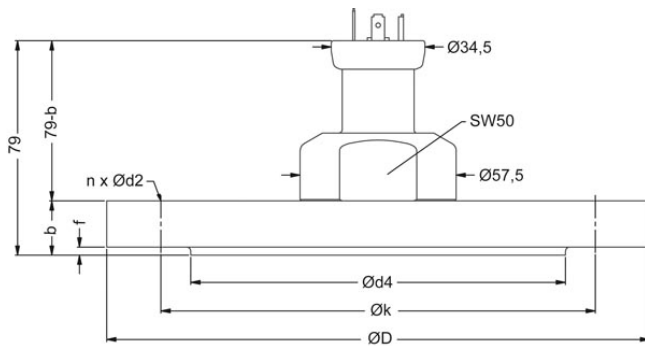
Inch thread



⇒ For version field housing with pressure port in CuNi10Fe1Mn, total length increases by 27 mm!

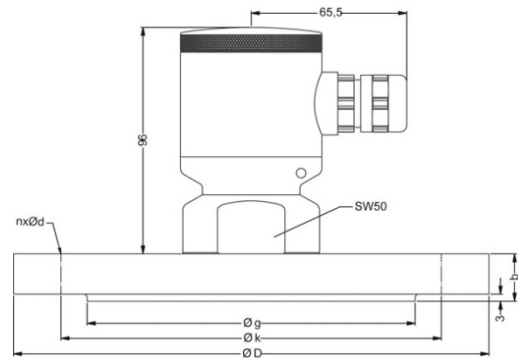
Dimensions (in mm)

Flange ⁶ (DIN 2501)



with plug version and cable outlet

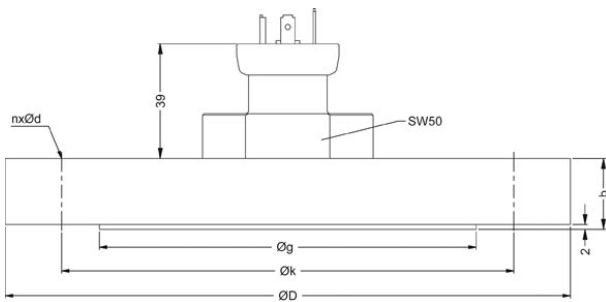
dimensions in mm				
size	DN25/PN40	DN40/PN40	DN50/PN40	DN80/PN16
D	115	150	165	200
k	85	110	125	160
d4	68	88	102	138
b	18	18	20	20
f	2	3	3	3
n	4	4	4	8
d2	14	18	18	18



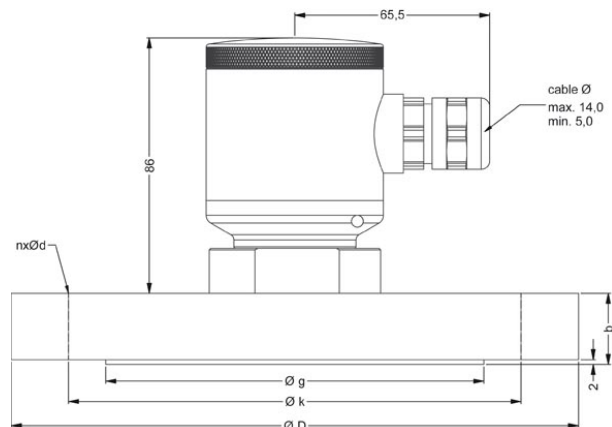
with field housing

dimensions in mm				
size	DN25/PN40	DN40/PN40	DN50/PN40	DN80/PN16
D	115	150	165	200
k	85	110	125	160
g	68	88	102	138
b	18	18	20	20
n	4	4	4	8
d	14	18	18	18

Flange ⁶ (ANSI)



with plug version and cable outlet



with field housing

dimensions in mm		
size	2"/150 lbs	3"/150 lbs
D	152.4	190.5
g	91.9	127
k	120.7	152.4
b	19.1	23.9
n	4	4
d	19.1	19.1

⇒ For version field housing with pressure port in CuNi10Fe1Mn, total length increases by 27 mm!

⁶ DN80/PN16 possible for nominal pressure ranges $P_N \leq 16$ bar; 2"/150 lbs and 3"/150 lbs possible for nominal pressure ranges $P_N \leq 10$ bar

Ordering code DMK 458

DMK 458

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Pressure																				
Pressure	in bar, gauge	5	9	A																
	in bar, absolute ¹	5	9	B																
	in bar, sealed gauge ¹	5	9	E																consult
	in mH ₂ O, gauge	5	9	C																
	in mH ₂ O, absolute ¹	5	9	D																consult
	in mH ₂ O, sealed gauge ¹	5	9	F																
Input		[mH ₂ O]	[bar]																	
		0.4	0.04	0	4	0	0													
		0.6	0.06	0	6	0	0													
		1.0	0.1	1	0	0	0													
		1.6	0.16	1	6	0	0													
		2.5	0.25	2	5	0	0													
		4.0	0.40	4	0	0	0													
		6.0	0.60	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													
		200	20	2	0	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																				
	standard: 0.25%									2										
	option for P _n > 0.6 bar: 0.1%									1										
	customer									9										consult
Electrical connection																				
	Male and female plug ISO 4400 ² (for cable Ø 4 ... 6 mm)									G	1	0								
	Male and female plug ISO 4400 GL ² (for cable Ø 10 ... 14 mm)									G	0	0								
	Male and female plug ISO 4400 GL ² (for cable Ø 4.5 ... 11 mm)									G	0	1								
	Male plug M12x1 (4-pin) / metal version									M	1	0								
	Cable outlet with TPE-U-cable (with ventilation tube)									T	R	3								
	Field housing, absolute, sealed gauge									8	8	0								
	customer									9	9	9								consult
Mechanical connection																				
	G 1/2" DIN 3852									1	0	0								
	G 1/2" EN 837									2	0	0								
	1/2" NPT									N	0	0								
	Flange DN 25 / PN 40 (DIN 2501)									F	2	0								
	Flange DN 40 / PN 40 (DIN 2501)									F	2	2								
	Flange DN 50 / PN 40 (DIN 2501)									F	2	3								
	Flange DN 80 / PN 16 (DIN 2501) ³									F	1	4								
	Flange DN 2" / 150 lbs (ANSI B 16.5)									F	3	2								
	Flange DN 3" / 150 lbs (ANSI B 16.5)									F	3	3								
	customer									9	9	9								consult
Seals																				
	FKM									1										
	andere									9										consult
Pressure port																				
	Stainless steel 1.4404 (316L)									8										
	Copper-Nickel-alloy (CuNi10Fe1Mn) ⁴									K										consult
	customer									9										consult
Diaphragm																				
	Ceramics Al ₂ O ₃ 96%									2										
	Ceramics Al ₂ O ₃ 99.9%									C										
	customer									9										consult
Special version																				
	standard									0	0	0								
	customer									9	9	9								consult

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¹ nominal pressure ranges absolute and sealed gauge from 1 bar
² female plug is GL-approved
³ DN80/PN16 possible for nominal pressure ranges PN ≤ 16 bar; 2"/150 lbs and 3"/150 lbs possible for nominal pressure ranges PN ≤ 10 bar
⁴ CuNi10Fe1Mn only possible in combination with inch thread

