

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)
- ▶ DNV•GL Approval (Det Norske Veritas
▪ Germanischer Lloyd)
- ▶ ABS-certificate
(American Bureau of Shipping)
- ▶ CCS-certificate
(China Classification Society)
- ▶ high overpressure resistance
- ▶ excellent long term stability

Optional versions

- ▶ IS-version
Ex ia= intrinsically safe for gases
- ▶ 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



DMK 458

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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 and absolute; nominal pressure ranges 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 - DNV•GL (Det Norske Veritas • Germanischer Lloyd)	
Mechanical stability		
Vibration	4 g (according to DNV•GL: Class B, curve 2 / basis: IEC 60068-2-6)	
Materials		
Pressure port	standard: stainless steel 1.4404 (316 L) option for inch thread G1/2" open pressure port (not possible with field housing): CuNi10Fe1Mn	
Housing	stainless steel 1.4404 (316 L)	
Option field housing	stainless steel 1.4404 (316 L) cable gland: absolute, sealed gauge: brass, nickel plated gauge: polyamide (with integrated pressure reference); others on request	
Cable sheath for option cable outlet	TPE -U (flame-resistant, halogen free, increased resistance against oil and gasoline, resistant against salt, sea water, heavy oil)	
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
Det Norske Veritas • Germanischer Lloyd (DNV•GL)	temperature: D vibration: B humidity: B enclosure: D electromagnetic compatibility: B	number of certificate: TAA00001GR

⁴ not valid for IS-version (DX14A-DMK 458)

Explosion protection		
Approval DX14A-DMK 458	IBExU 07 ATEX 1180 X field housing zone 0: II 1G Ex ia IIC T4 Ga ISO 4400, M12x1, cable outlet: zone 0: II 1G Ex ia IIB T4 Ga	
Safety technical maximum values	U _i = 28 V; I _i = 93 mA; P _i = 660 mW; L _i = 0 μH field housing: C _i = 52.3 nF; 90.2 nF opposite GND ISO 4400, M12x1, cable outlet: C _i = 105 nF; 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	IP 65, IP 67, IP 68	
Installation position	any	
Current consumption	max. 21 mA	
Weight	min. 400 g (depending on housing and mechanical connection)	
Operational life	100 million load cycles	
CE conformity	EMC Directive: 2014/30/EU	
ATEX Directive	2014/34/EU	

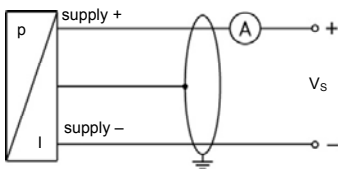
DMK 458

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Technical Data

Wiring diagram

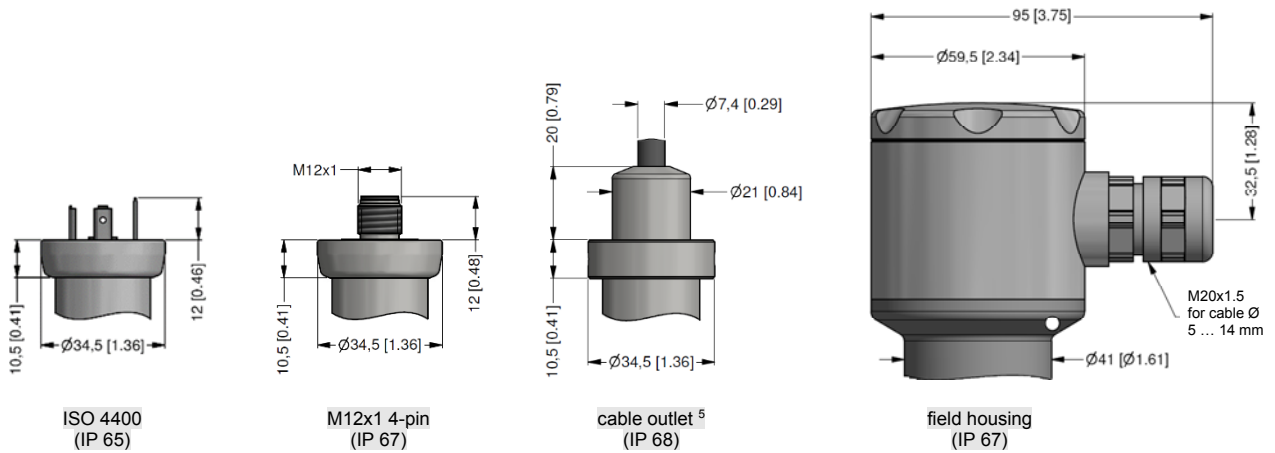
2-wire-system (current)



Pin configuration

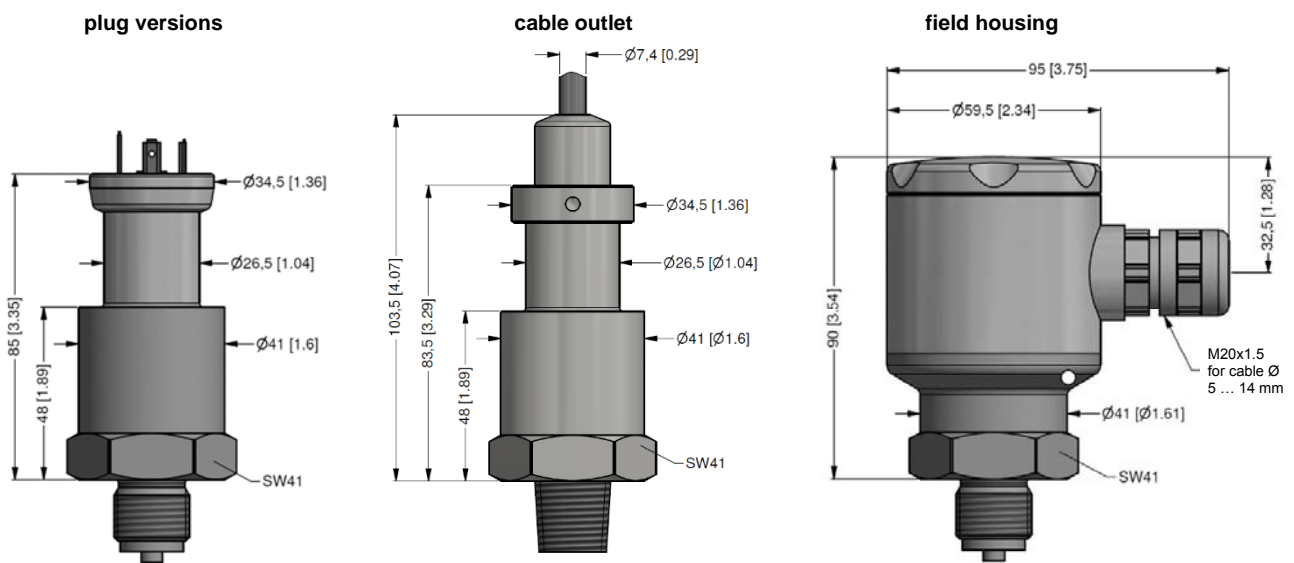
Electrical connections	ISO 4400	field housing (clamp section: 2.5 mm ²)	M12x1 (4-pin), metal	cable colours (IEC 60757)
Supply +	1	VS+	1	WH (white)
Supply -	2	VS-	2	BN (brown)
Shield	ground pin	GND	4	GYNE (green-yellow)

Electrical connections (dimensions mm / in)



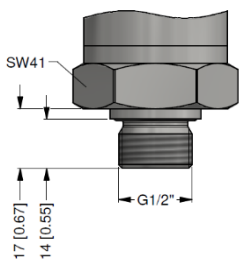
⁵ cable versions are delivered with shielded cable (different lengths available);
for gauge pressure cable with ventilation tube required; tested at 4 bar or 40 mH₂O for 24 hours

Dimensions (mm / in)

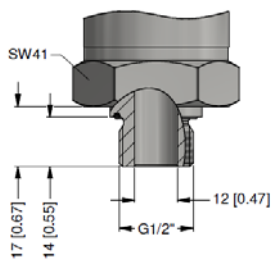


Mechanical connections (dimensions mm / in)

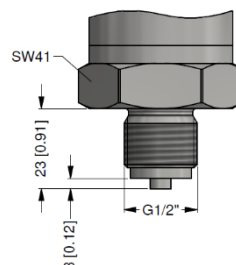
inch thread



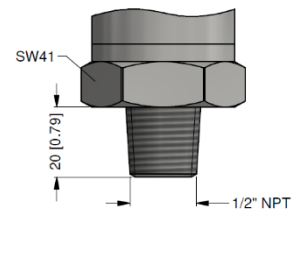
G1/2" 3852



G1/2" 3852
open port

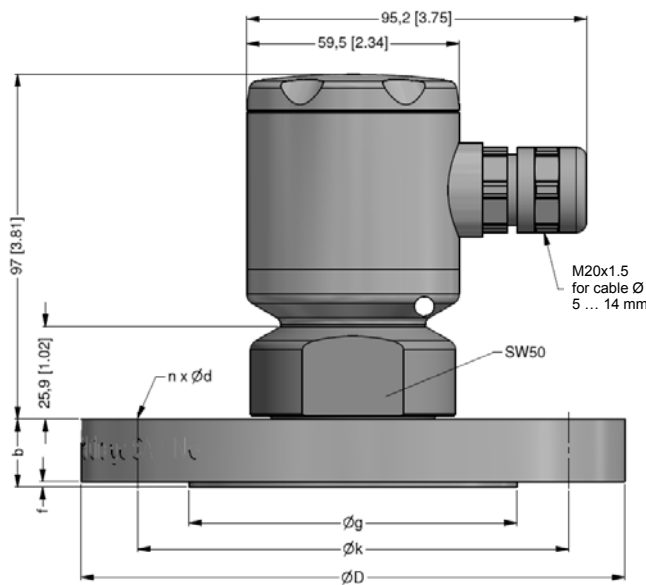


G1/2" EN 837

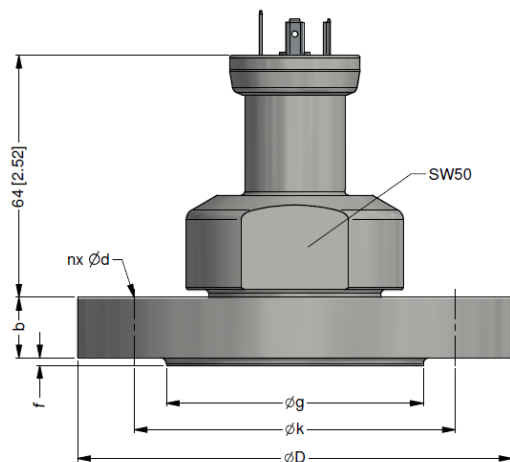


1/2" NPT

flange



flange with field housing



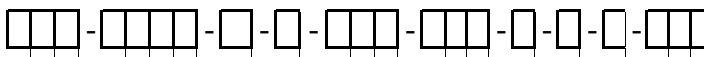
flange with plug version and cable outlet

size	dimensions in mm					
	DIN 2501				ANSI	
	DN25/PN40	DN40/PN40	DN50/PN40	DN80/PN16	2"/150 lbs	3"/150 lbs
b	18	18	20	20	19.1	23.9
d	14	18	18	18	19.1	19.1
D	115	150	165	200	152.4	190.5
f	2	3	3	3	2	2
g	68	88	102	138	91.9	127
k	85	110	125	160	120.7	152.4
n	4	4	4	8	4	4
p _N [bar]	≤ 40	≤ 40	≤ 40	≤ 16	≤ 10	≤ 10

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Ordering code DMK 458

DMK 458



Pressure										
	in bar, gauge		5	9	A					
	in bar, absolute ¹		5	9	B					
	in mH ₂ O, gauge		5	9	C					
	in mH ₂ O, absolute ¹		5	9	D					consult
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 % FSO							2	
	option for p _N ≥ 0.6 bar:	0.1 % FSO							1	
	customer								9	consult
Electrical connection										
	male and female plug ISO 4400 ²								G 1 0	
	(for cable Ø 4 ... 6 mm)									
	male and female plug ISO 4400 GL ²								G 0 0	
	(for cable Ø 10 ... 14 mm)									
	male and female plug ISO 4400 GL ²								G 0 1	
	(for cable Ø 4.5 ... 11 mm)									
	male plug M12x1 (4-pin) / metal version								M 1 0	
	cable outlet with TPE-U-cable (with ventilation tube)								T R 3	
	field housing stainless steel 1.4404 (316L)								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	
	G1/2" DIN 3852 open pressure port								H 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) ³								F 3 2	
	flange DN 3" / 150 lbs (ANSI B 16.5) ³								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

¹ nominal pressure ranges absolute from 1 bar

² female plug is GL-approbated

³ DN80/P_N16 possible for nominal pressure ranges P_N ≤ 16 bar; 2"/150 lbs and 3"/150 lbs possible for nominal pressure ranges P_N ≤ 10 bar

⁴ CuNi10Fe1Mn only in combination with G 1/2" open pressure port (code H00); not possible with field housing (code 880)