

DMK 456

Pressure Transmitter with Stainless Steel Field Housing

Special application:
Marine and Offshore

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)
- ▶ stainless steel field housing
- ▶ IS-version (temperature class T6)
Ex ia = intrinsically safe for gases
- ▶ high overpressure resistance






Optional versions

- ▶ diaphragm Al₂O₃ 99.9 %
- ▶ different inch threads and flush versions

The pressure transmitter DMK 456 has been developed for measuring the pressure in systems and the level in tanks and is certificated for shipbuilding and offshore applications.

Due robust stainless steel field housing and the possibility to use the device in intrinsic safe areas (temperature class T6) enable to measure the pressure of aggressive gases and fluids under extreme operating conditions. The basis for the DMK 456 is a capacitive ceramic sensor element designed by BD|SENSORS, which offers a high overload resistance and medium compatibility.

Preferred areas of use are

-  Monitoring of the 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
-  Monitoring of the internal pressure in liquid gas cargo tanks



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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
Permissible 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 IS-version / V _S = 14 ... 28 V _{DC}										V _{S rated} = 24 V _{DC}					
Performance																
Accuracy ²	standard: ≤ ± 0.25 % FSO options: 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 decreased to ≤ ± 0.25 % FSO.																
Thermal effects / Permissible temperatures																
Thermal error	≤ ± 0.1 % FSO / 10 K in compensated range -20 ... 80 °C															
Permissible temperatures	medium: -25 ... 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	stainless steel 1.4404 (316 L)															
Housing	stainless steel 1.4404 (316 L)															
Cable gland	brass, nickel plated others on request															
Seals	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, EMV4										number of certificate: 13/20055					
Det Norske Veritas • Germanischer Lloyd (DNV•GL)	temperature: D humidity: B vibration: B electromagnetic compatibility: B enclosure: D										number of certificate: TAA00001GR					
Explosion protection																
Approval DX14A-DMK 456	IBExU07ATEX1180 X zone 0: II 1G Ex ia IIC T6 Ga															
Safety techn. maximum values	U _i = 28 V, I _i = 93 mA, P _i = 660 mW, C _i = 52.3 nF, L _i = 5 μH, the supply connections have an inner capacity of max. 90.2 nF opposite the enclosure															
Permissible temperatures for environment	-20 ... 60 °C in zone 0: with p _{atm} 0.8 up to 1.1 bar															
Miscellaneous																
Ingress protection	IP 67															
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															

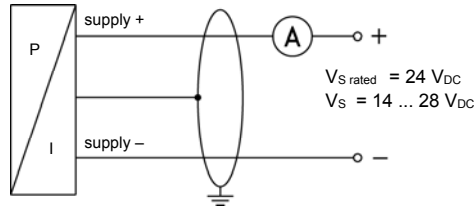
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Technical Data

Wiring diagram

2-wire-system (current)



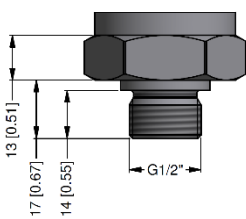
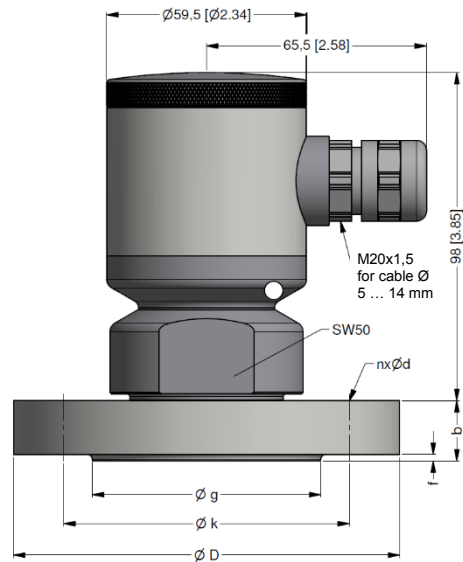
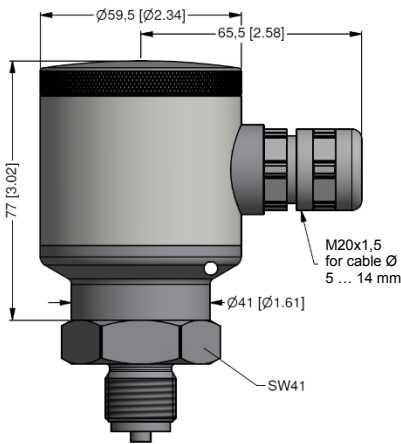
Pin configuration

Electrical connections	field housing (clamp section: 2.5 mm ²)
Supply +	IN+
Supply -	IN-
Ground	⏏

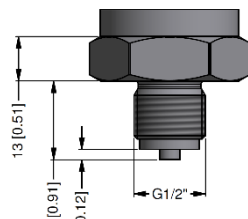
Dimensions (in mm)

Inch thread

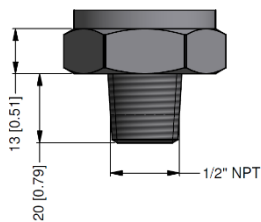
Flange



G1/2" 3852



G1/2" EN 837



1/2" NPT

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

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Ordering code DMK 456

DMK 456

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Pressure											
	in bar, gauge	5	9	5							
	in bar, absolute ¹	5	9	6						consult	
	in mH ₂ O, gauge	5	9	7							
	in mH ₂ O, absolute ¹	5	9	8						consult	
Input											
	[mH ₂ O]	[bar]									
	0.40	0.04	0	4	0	0					
	0.60	0.06	0	6	0	0					
	1.0	0.10	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											
	Intrinsic safety 4 ... 20 mA / 2-wire						E				
	customer						9			consult	
Accuracy											
	standard	0.25 %					2				
	option for PN ≥ 0,6 bar:	0.1 %					1				
	customer						9			consult	
Electrical connection											
	Field housing						8	8	0		
	customer						9	9	9	consult	
Mechanical connection											
	G1/2" DIN 3852						1	0	0		
	G1/2" EN 837						2	0	0		
	1/2" NPT						N	0	0		
	Flange DN 25 / PN 40 (DIN 2501)						F	2	0		
	Flange DN 50 / PN 40 (DIN 2501)						F	2	3		
	Flange DN 80 / PN 16 (DIN 2501) ²						F	1	4		
	Flange DN 2" / 150 lbs (ANSI B16.5) ²						F	3	2		
	Flange DN 3" / 150 lbs (ANSI B16.5) ²						F	3	3		
	customer						9	9	9	consult	
Seals											
	FKM								1		
	customer								9	consult	
Pressure port											
	Stainless steel 1.4404 (316L)								1		
	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

¹ nominal pressure ranges absolute from 1 bar

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

