

# 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)
- ▶ GL-certificate (Germanischer Lloyd)
- ▶ DNV-certificate (Det Norske Veritas)
- ▶ 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 Al<sub>2</sub>O<sub>3</sub> 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 as a consequence 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



# DMK 456

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Technical Data

<b>Pressure ranges</b>																
Nominal pressure <sup>1</sup>	[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 <sub>2</sub> 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							
<sup>1</sup> available in gauge and absolute; nominal pressure ranges absolute from 1 bar																
<b>Output signal / Supply</b>																
Standard	2-wire: 4 ... 20 mA IS-version / V <sub>S</sub> = 14 ... 28 V <sub>DC</sub>										V <sub>S rated</sub> = 24 V <sub>DC</sub>					
<b>Performance</b>																
Accuracy <sup>2</sup>	standard: ≤ ± 0.25 % FSO options: P <sub>N</sub> ≥ 0.6 bar <sup>3</sup> : ≤ ± 0.1 % FSO															
Permissible load	R <sub>max</sub> = [(V <sub>S</sub> - V <sub>S min</sub> ) / 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															
<sup>2</sup> accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)																
<sup>3</sup> Under the influence of disturbance burst according to EN 61000-4-4 (2004) +2 kV accuracy decreased to ≤ ± 0.25 % FSO.																
<b>Thermal effects / Permissible temperatures</b>																
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															
<b>Electrical protection</b>																
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)															
<b>Mechanical stability</b>																
Vibration	4 g (according to GL: curve 2 / basis: DIN EN 60068-2-6)															
<b>Materials</b>																
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 <sub>2</sub> O <sub>3</sub> 96 % option: ceramics Al <sub>2</sub> O <sub>3</sub> 99.9 %															
Media wetted parts	pressure port, seals, diaphragm															
<b>Category of the environment</b>																
Lloyd's Register (LR)	EMV1, EMV2, EMV4								number of certificate: 13/20055							
Germanischer Lloyd (GL)	D, F, EMC 1								number of certificate: 58 587 - 08 HH							
Det Norske Veritas (DNV)	temperature: D				humidity: B				vibration: B				number of certificate: A-12144			
<b>IS protection</b>																
Approval DX14A-DMK 456	IBExU07ATEX1180 X zone 0: II 1G Ex ia IIC T6 Ga															
Safety techn. maximum values	U <sub>i</sub> = 28 V, I <sub>i</sub> = 93 mA, P <sub>i</sub> = 660 mW, C <sub>i</sub> = 52.3 nF, L <sub>i</sub> = 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 <sub>atm</sub> 0.8 up to 1.1 bar							
<b>Miscellaneous</b>																
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 x 10 <sup>5</sup> cycles															
CE conformity	EMC Directive: 2014/30/EU															
ATEX Directive	2014/34/EU															

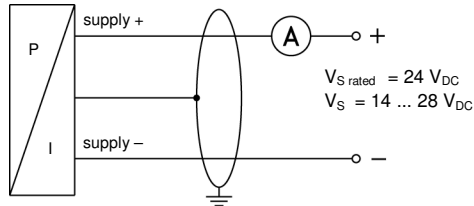
# DMK 456

Transmitter with Stainless Steel Field Housing

Technical Data

## Wiring diagram

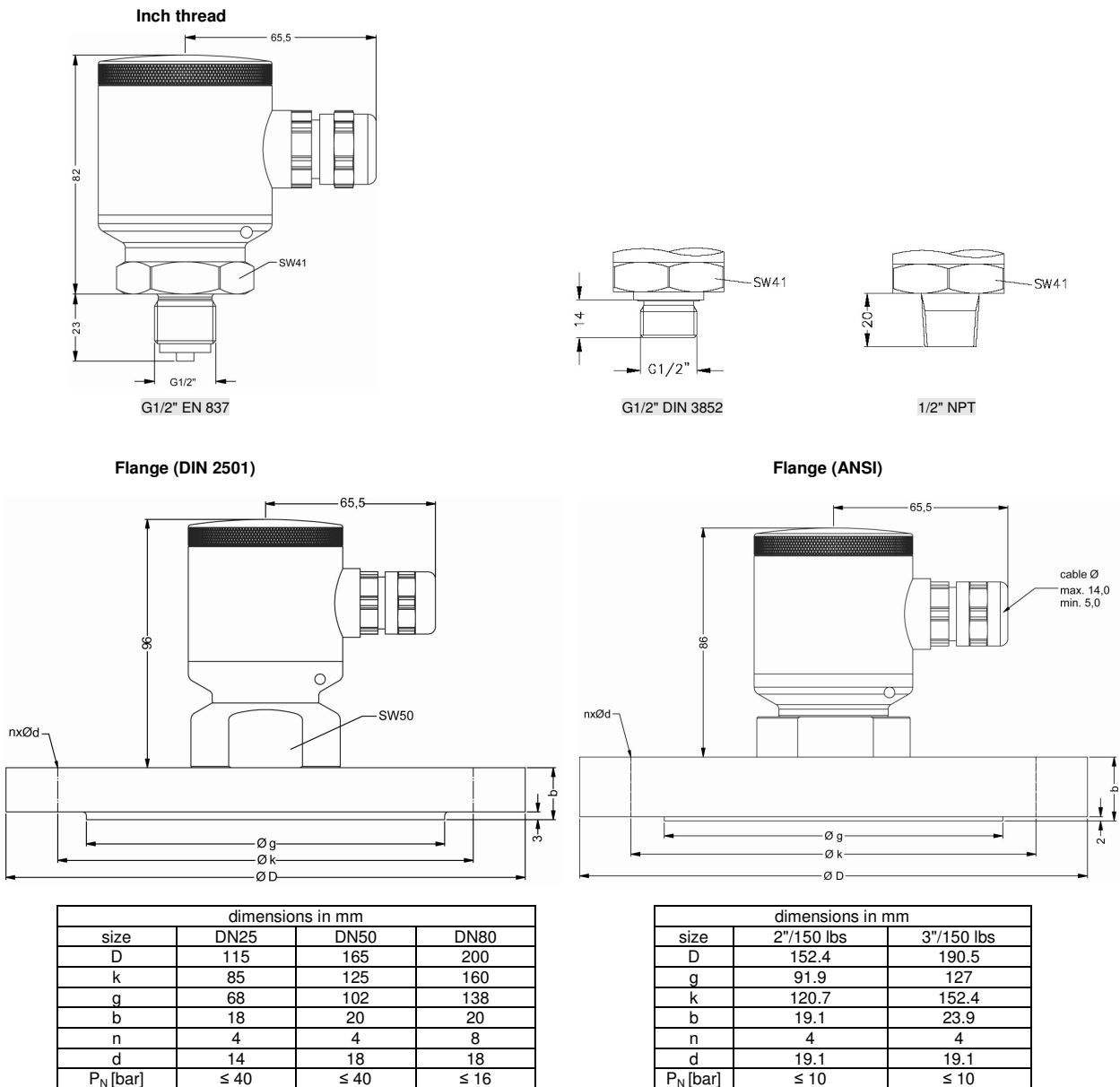
2-wire-system (current)



## Pin configuration

Electrical connections	field housing (clamp section: 2.5 mm <sup>2</sup> )
Supply +	IN+
Supply -	IN-
Ground	⊥

## Dimensions (in mm)



\* for gauge pressure ranges, the marked dimension increases by 8 mm!

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## Ordering code DMK 456

DMK 456

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<b>Pressure</b>										
	in bar, gauge	5	9	5						
	in bar, absolute <sup>1</sup>	5	9	6						consult
	in mH <sub>2</sub> O, gauge	5	9	7						
	in mH <sub>2</sub> O, absolute <sup>1</sup>	5	9	8						consult
<b>Input</b>										
	[mH <sub>2</sub> 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
<b>Output</b>										
	Intrinsic safety 4 ... 20 mA / 2-wire						E			
	customer						9			consult
<b>Accuracy</b>										
	standard	0.25 %					2			
	option for PN ≥ 0,6 bar:	0.1 %					1			
	customer						9			consult
<b>Electrical connection</b>										
	Field housing						8	8	0	
	customer						9	9	9	consult
<b>Mechanical connection</b>										
	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) <sup>2</sup>						F	1	4	
	Flange DN 2" / 150 lbs (ANSI B16.5) <sup>2</sup>						F	3	2	
	Flange DN 3" / 150 lbs (ANSI B16.5) <sup>2</sup>						F	3	3	
	customer						9	9	9	consult
<b>Seals</b>										
	FKM						1			
	customer						9			consult
<b>Pressure port</b>										
	Stainless steel 1.4404 (316L)						1			
	customer						9			consult
<b>Diaphragm</b>										
	Ceramics Al <sub>2</sub> O <sub>3</sub> 96%						2			
	Ceramics Al <sub>2</sub> O <sub>3</sub> 99,9%						C			
	customer						9			consult
<b>Special version</b>										
	standard							0	0	0
	customer							9	9	9
										consult

<sup>1</sup> nominal pressure ranges absolute from 1 bar

<sup>2</sup> 2"/150 lbs and 3"/150 lbs possible for nominal pressure ranges P<sub>N</sub> ≤ 10 bar

