

# 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 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 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

Pressure Transmitter with Stainless Steel Field Housing

Technical Data

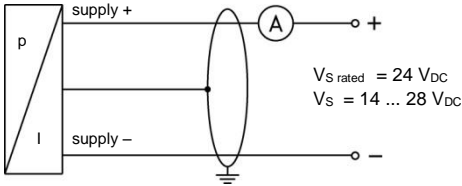
Pressure ranges																
Nominal pressure <sup>1</sup>	[bar]	0.04	0.06	0.1	0.16	0.25	0.4	0.6	1	1.6	2.5	4	6	10	16	20
Level	[mH <sub>2</sub> O]	0.4	0.6	1	1.6	2.5	4	6	10	16	25	40	60	100	160	200
Permissible overpressure	[bar]	2	2	4	4	6	6	8	8	15	25	25	35	35	45	45
Permissible vacuum	[bar]	-0.2		-0.3		-0.5			-1							

<sup>1</sup> available in gauge and absolute; nominal pressure ranges absolute from 1 bar

Output signal / Supply	
Standard	IS-version 4 ... 20 mA / 2-wire $V_S = 14 \dots 28 V_{DC}$ $V_{S \text{ rated}} = 24 V_{DC}$
Performance	
Accuracy <sup>2</sup>	standard: $\leq \pm 0.25 \% \text{ FSO}$ option for $P_N \geq 0.6 \text{ bar}^3$ : $\leq \pm 0.1 \% \text{ FSO}$
Permissible load	$R_{\text{max}} = [(V_S - V_{S \text{ min}}) / 0.02 \text{ A}] \Omega$
Long term stability	$\leq \pm 0.1 \% \text{ FSO} / \text{year}$ at reference conditions
Influence effects	supply: 0.05 % FSO / 10 V load: 0.05 % FSO / k $\Omega$
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 $\leq \pm 0.25 \% \text{ FSO}$	
Thermal effects (offset and span)	
Tolerance band	$\leq \pm 1 \% \text{ FSO}$
in compensated range	-20 ... 80 °C
Permissible temperatures	
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 <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
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 number of certificate: TAA00001GR humidity: B vibration: B electromagnetic compatibility: B enclosure: D
Explosion protection	
Approval DX14A-DMK 456	IBExU07ATEX1180 X zone 0: II 1G Ex ia IIC T6 Ga
Safety techn. maximum values	$U_i = 28 \text{ V}$ , $I_i = 93 \text{ mA}$ , $P_i = 660 \text{ mW}$ , $C_i = 52.3 \text{ nF}$ , $L_i = 0 \mu\text{H}$ , the supply connections have an inner capacity of max. 90.2 nF opposite the enclosure
Permissible temperatures for environment	-20 ... 60 °C
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

### Wiring diagram

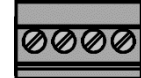
2-wire-system (current)



### Pin configuration

Electrical connections

field housing (clamp section: 2.5 mm<sup>2</sup>)



$V_{S+}$   $V_{S-}$  S+ GND

Supply +

VS+

Supply -

VS-

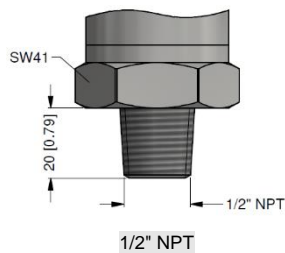
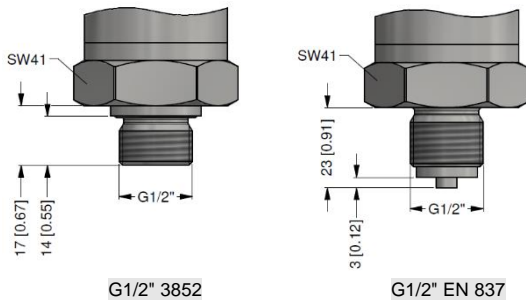
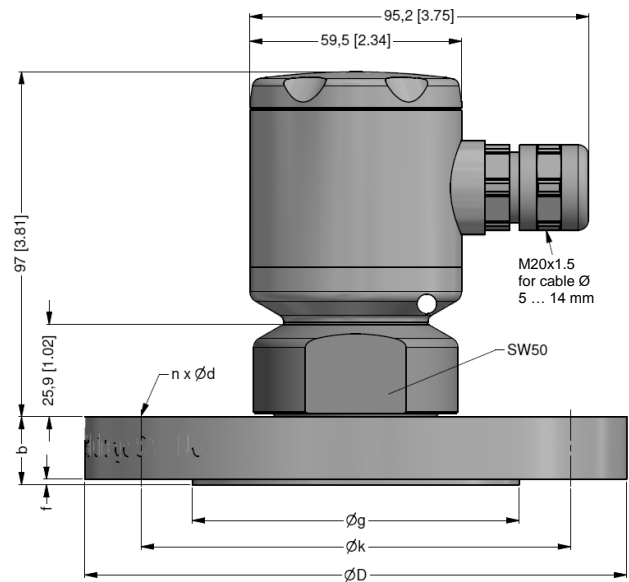
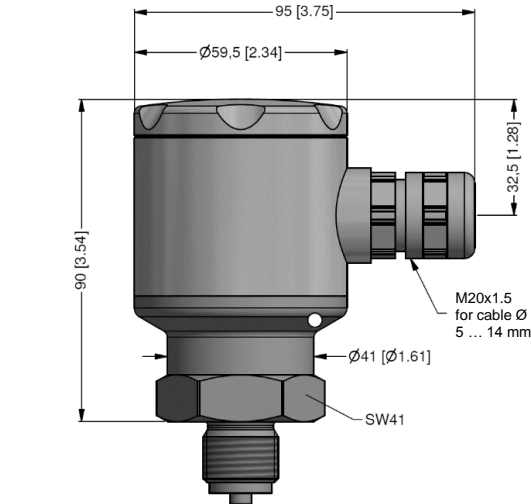
Ground

GND

### Dimensions (mm / in)

inch thread

flange



dimensions in mm					
	DIN 2501			ANSI	
size	DN25/PN40	DN50/PN40	DN80/PN16	2\"/>	
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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