

# DMK 457

## Pressure Transmitter for Shipbuilding and Offshore

- ▶ ceramic sensor
- ▶ accuracy:  
0.25 % FSO BFSL  
(0.50 % FSO IEC 60770)
- ▶ nominal pressure ranges  
from 0 ... 0.6 bar  
up to 0 ... 600 bar

The pressure transmitter DMK 457 with ceramic sensor has been designed for hard conditions especially in shipbuilding and offshore applications as alternative to our pressure transmitter DMP 457 with piezoresistive stainless steel sensor.

In order to meet the special requirements for shipbuilding and offshore applications extensive tests had to be passed to get the Germanischer Lloyd (GL) and Det Norske Veritas (DNV) approvals.

With mechanical versions G1/2" open port and G1/2" flush DIN 3852 the DMK 457 is especially suited for viscous, pasty or contaminated media due of the ceramic sensor.

Typical areas of use for shipbuilding/offshore are:

- ▶ gears
- ▶ compressors
- ▶ boilers
- ▶ pneumatic controls
- ▶ elevators
- ▶ oxygen applications

- ▶ small thermal effect
- ▶ good long-term stability
- ▶ option: oxygen application
- ▶ **Option Ex-protection  
TÜV 03 ATEX 2006 X**
- ▶ customer specific versions:
  - special pressure ranges
  - other versions on request

Characteristics



**DMK 457**  
Transmitter for Shipbuilding and Offshore

# DMK 457

Transmitter for Shipbuilding and Offshore

Technical Data

Input pressure range																	
Nominal pressure gauge [bar]	-1...0	0.6	1	1.6	2.5	4	6	10	16	25	40	60	100	160	250	400	600
Nominal pressure abs. [bar]	-	0.6	1	1.6	2.5	4	6	10	16	25	40	60	100	160	250	400	600
Level gauge / abs. [mWC]	-	6	10	16	25	40	60	100	160	250	400	600	-	-	-	-	-
Permissible overpressure [bar]	3	3	3	7	7	12	12	25	50	50	120	120	250	500	500	600	750

Output signal / Supply		
Standard	2-wire: 4 ... 20 mA / $V_s = 12 \dots 36 V_{DC}$ (rated: 24 $V_{DC}$ )	
	Ex-protection: $V_s = 14 \dots 28 V_{DC}$	

Performance		
Accuracy	IEC 60770 <sup>1</sup> : $\leq \pm 0.5 \% \text{ FSO}$	BFSL: $\leq \pm 0.25 \% \text{ FSO}$
Permissible load	$R_{\max} = [(V_s - V_{s\min}) / 0.02] \Omega$	
Influence effects	supply: 0.05 % FSO / 10 V load: 0.05 % FSO / k $\Omega$	
Response time	< 10 msec.	

Thermal effects	
Thermal error for offset and span in compensated range	$\leq \pm 0.2 \% \text{ FSO} / 10 \text{ K}$ -25 ... 85 °C

Electrical protection	
Reverse polarity protection	no damage, but also no function
Electromagnetic compatibility	emission and immunity according to - EN 61326 - Germanischer Lloyd (GL) - Det Norske Veritas (DNV)
Option Ex-protection DX13-DMK 457	zone 0 <sup>2</sup> : II 1 G EEx ia IIC T4 zone 20: II 1 D T 85°C safety technical maximum values: $V_i = 28 \text{ V}$ , $I_i = 93 \text{ mA}$ , $P_i = 660 \text{ mW}$ , $C_i \leq 1 \text{ nF}$ , $L_i \leq 10 \mu\text{H}$

Mechanical stability	
Vibration	4 g (5 ... 100 Hz)

Permissible temperatures		
Medium	-25 ... 135 °C	
Electronics / environment	-25 ... 80 °C	Ex-protection: application in zone 0: -20 ... 60 °C application in zone 1 or higher: -25 ... 70 °C
Storage	-40 ... 100 °C	

<sup>1</sup> accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)

<sup>2</sup> approved for atmospheric pressure from 0.8 bar up to 1.1 bar

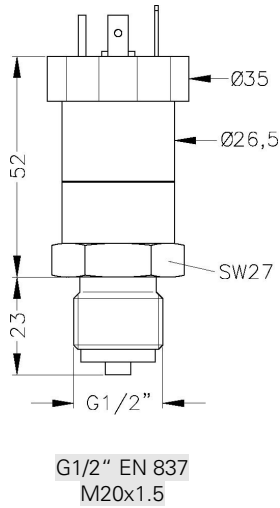
# DMK 457

Transmitter for Shipbuilding and Offshore

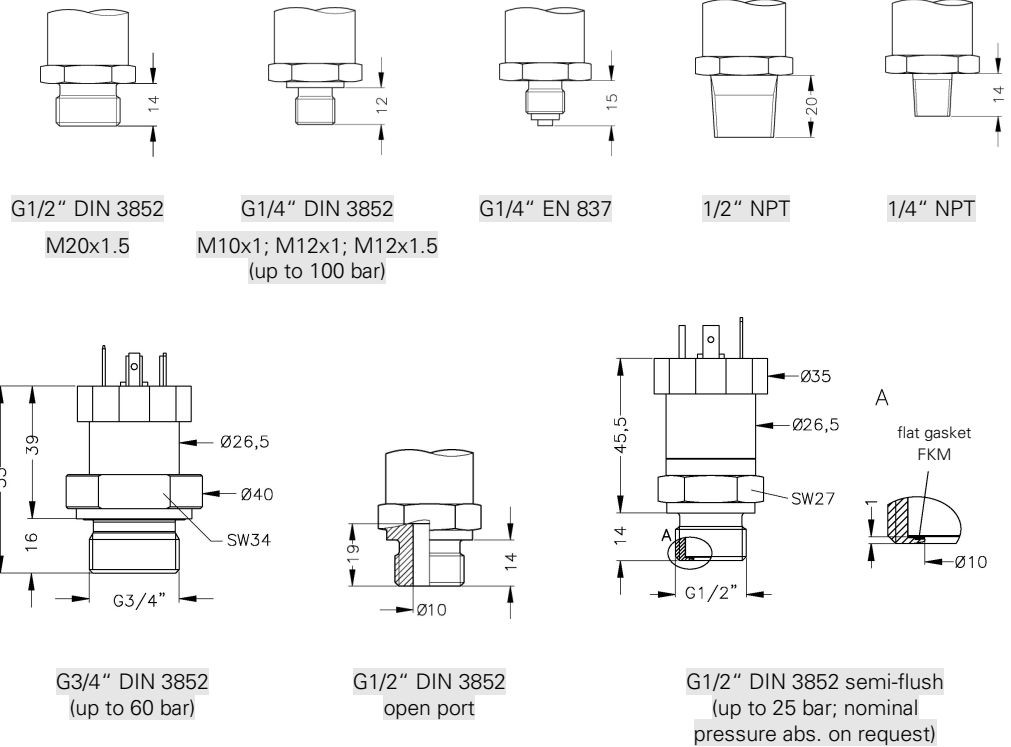
Technical Data

## Mechanical connection

### Standard



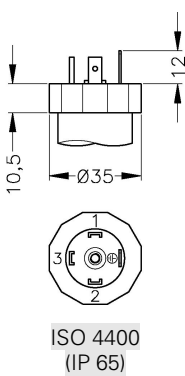
### Options



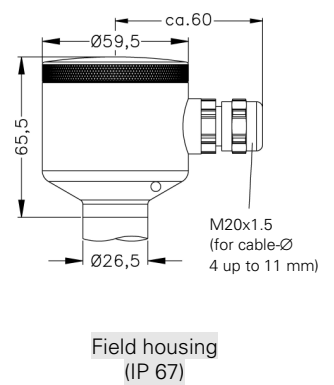
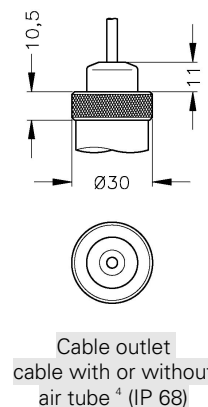
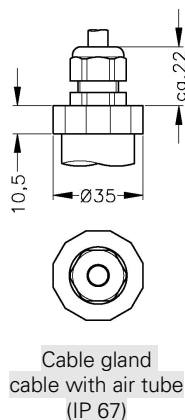
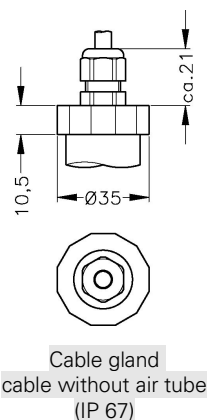
⇒ With Ex-protection total length increases by 32.5 mm (with G3/4" by 36 mm; with field housing by 8 mm)!

## Electrical connection <sup>3</sup>

### Standard



### Optional



<sup>3</sup> Generally shielded cable has to be used! Cable versions are delivered with shielded cable. For ISO 4400 the use of shielded cable is compulsory.

<sup>4</sup> tested at 4 bar or 40 mWC for 24 hours

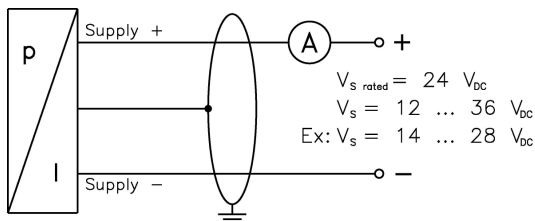
Materials	
Pressure port	standard: stainless steel 1.4571 (316Ti) option <sup>5</sup> : CuNi10Fe1Mn (sea water resistant) - for $P_N \leq 400$ bar with mech. connection G1/2" DIN 3852, G1/2" EN 837, 1/2" NPT in combination with housing in CuNi10Fe1Mn
Housing	standard: stainless steel 1.4301 (304) option <sup>5</sup> : CuNi10Fe1Mn (sea water resistant) - in combination with pressure port in CuNi10Fe1Mn option field housing: stainless steel 1.4404 (316L); with cable gland
Seals (media wetted)	$P_N < 100$ bar: FKM $P_N \geq 100$ bar: NBR others on request
Diaphragm	ceramics $Al_2O_3$ 96 %
Media wetted parts	pressure port, seals, diaphragm

Miscellaneous	
Optionally SIL 2 application	according to IEC 61508 / IEC 61511
Optionally oxygen application	for $P_N \leq 50$ bar: O-ring in V747-75 (with BAM-approval); permissible maximum values are 40 bar / 130° C and 50 bar / 100° C for $P_N > 50$ bar: O-ring in FKM 90 (approved by the scientific coal research institute in Ostrava – CZ) up to max. 215 bar / 95 °C
Connecting cables (by factory)	cable capacitance: signal line/shield also signal line/signal line: 160 pF/m cable inductance: signal line/shield also signal line/signal line: 1.0 µH/m
Current consumption	max. 25 mA
Weight	approx. 140 g
Installation position	any
Operational life	$> 100 \times 10^6$ cycles

Pin configuration			
Electrical connection		ISO 4400	cable colours (DIN 47100)
2-wire-system	Supply +	1	white
	Supply -	2	brown
	Ground	Ground pin	yellow / green (shield)

## Wiring diagram

2-wire-system (current)



<sup>5</sup> Ex-protection on request

