

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 in 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



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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 (offset and span) | | | | | | | | | | | | | | | | |
| Tolerance band | ≤ ± 1 % FSO | | | | | | | | | | | | | | | |
| 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 | | | | number of certificate: TAA00001GR | | | | | | | |
| | humidity: B | | | | enclosure: D | | | | | | | | | | | |
| | electromagnetic compatibility: B | | | | | | | | | | | | | | | |
| 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 | | | | | | | | | | | | | | | |

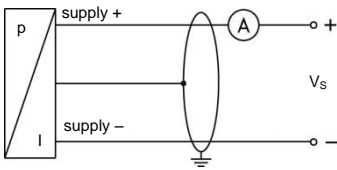
DMK 458

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Technical Data

Wiring diagram

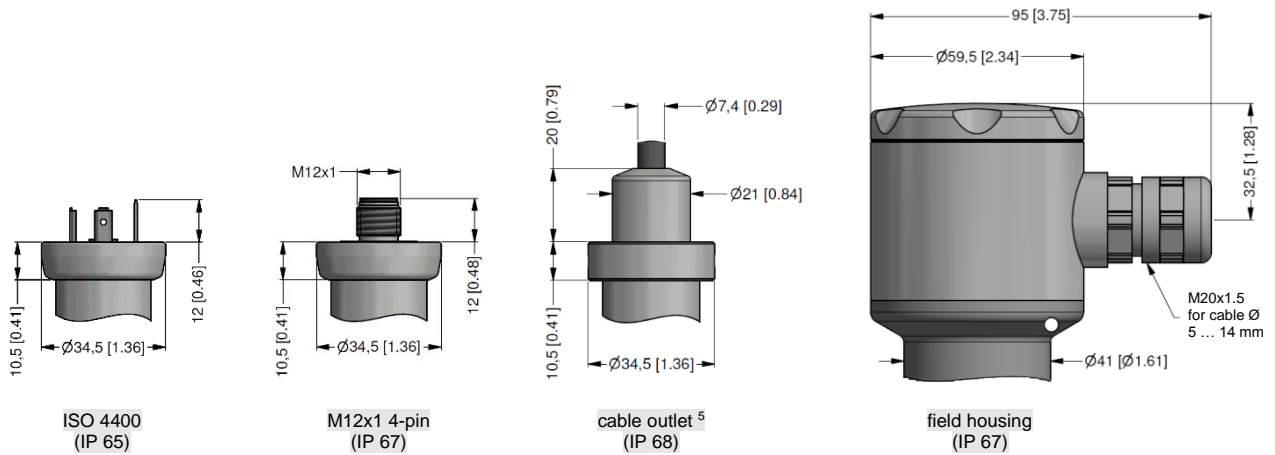
2-wire-system (current)



Pin configuration

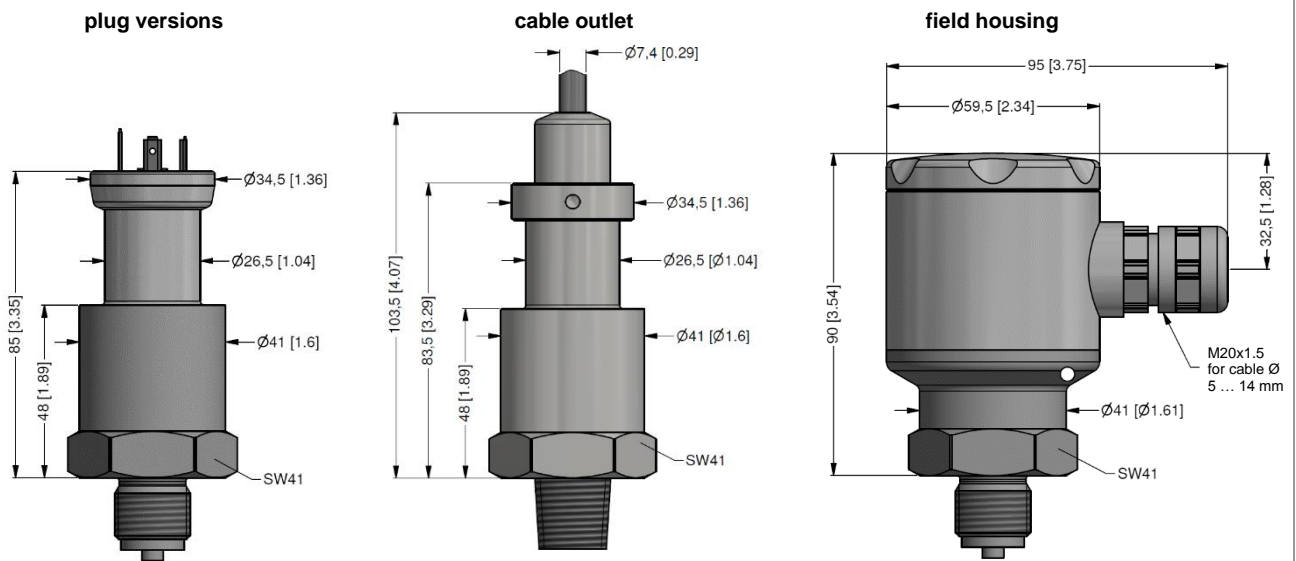
| Electrical connections | ISO 4400 | field housing (clamp section: 2.5 mm ²) | M12x1 (4-pin), metal | cable colours (IEC 60757) |
|------------------------|------------|---|-------------------------|------------------------------|
| | | | | |
| Supply + | 1 | VS+ | 1 | WH (white) |
| Supply - | 2 |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

Electrical connections (dimensions mm / in)



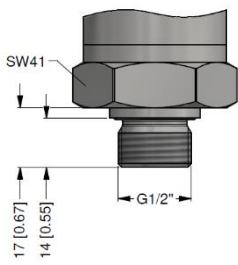
⁵ cable versions are delivered with shielded cable (different lengths available);
for gauge pressure cable with ventilation tube required; tested at 4 bar or 40 mH₂O for 24 hours

Dimensions (mm / in)

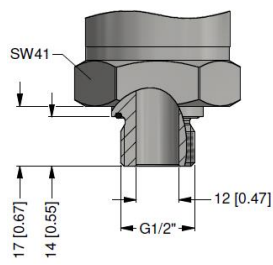


Mechanical connections (dimensions mm / in)

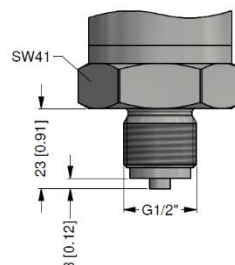
inch thread



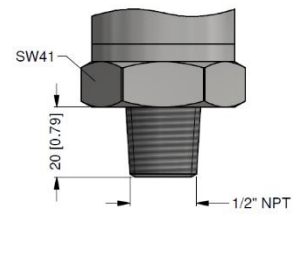
G1/2" 3852



G1/2" 3852
open port

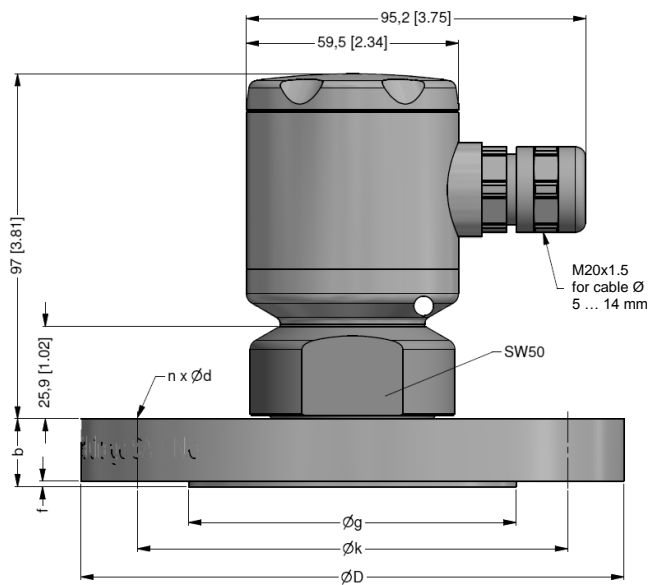


G1/2" EN 837

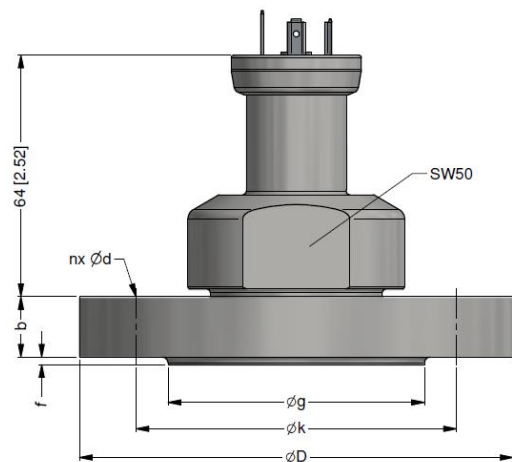


1/2" NPT

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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