

GT402



KONGSBERG



PRESSURE TRANSMITTER

The KONGSBERG GT402 is a type approved pressure transmitter, specially designed for maritime applications, like inert gas pressure, pump and line pressure measurements, and for level measurements in tanks. The transmitter is made in stainless steel AISI316L and suitable for wet installations rated IP67. Available as an absolute, sealed gauge or a gauge type, with pressure ranges from 0.16 to 400 Bar.

Principle of operation

The pressure sensing element is a dry, robust ceramic sensor element, with an internal strain gauge Wheatstone-bridge. For each sensor, the characteristics of the strain gauge is digitized and stored at known applied pressure and temperature and kept in sensor memory for the sensor's lifetime. This digital calibration enables a possibility to linearize and temperature compensate each transmitter uniquely, which again ensures high accuracy and temperature stability of each measurement.

The 96 % alumina membrane is resistant to most chemicals, thus the process medium is in direct contact with the measuring membrane, and there is no need for de-coupling in the form of a filling liquid and second membrane. A filling liquid and a second membrane can be a source of errors. This is why dry capsule sensors have superior specifications compared to wet capsule versions.

Installation

The transmitter consists of a sensing element together with a signal converter unit encapsulated in a body made of stainless steel, AISI 316L. For seawater applications a transmitter with front adapter in Titanium is available.

Process connection is ISO228-G1/2A threads, male connector.

The electrical connection is by a cable gland on the connection box. Minimum requirement is 2 x 0.5 mm² twisted pair cable with Cu-screen. The Cu-screen shall be grounded in the cable gland on the transmitter. On the monitoring side, the screen shall be grounded as near to the input channel in the monitoring cabinet/system as possible (see Figure 1).

Power supply to the transmitter is 24 VDC nominal, but the transmitter will tolerate a variation from 12 VDC to 32 VDC from the power source.

When used in hazardous areas as Intrinsic Safe apparatus, the power supply is restricted to 28 VDC. The allowable load is determined by the minimum power supply.

The KONGSBERG DZ-110 Transmitter Barrier matches the GT402 pressure transmitter perfectly, and allows the transmitter to be used in hazardous areas (for connection details, see Figure 2).

Kongsberg Maritime can deliver detailed installation instructions and necessary installation material for various applications.

DRAWINGS AND INSTALLATION

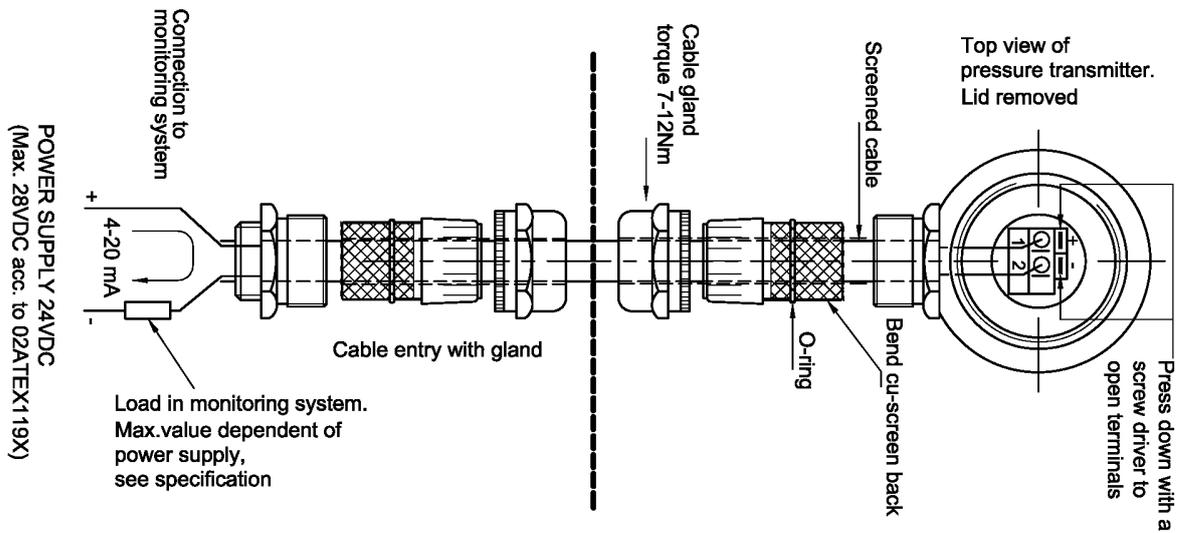


Figure 1: Electrical and mechanical installation of GT402

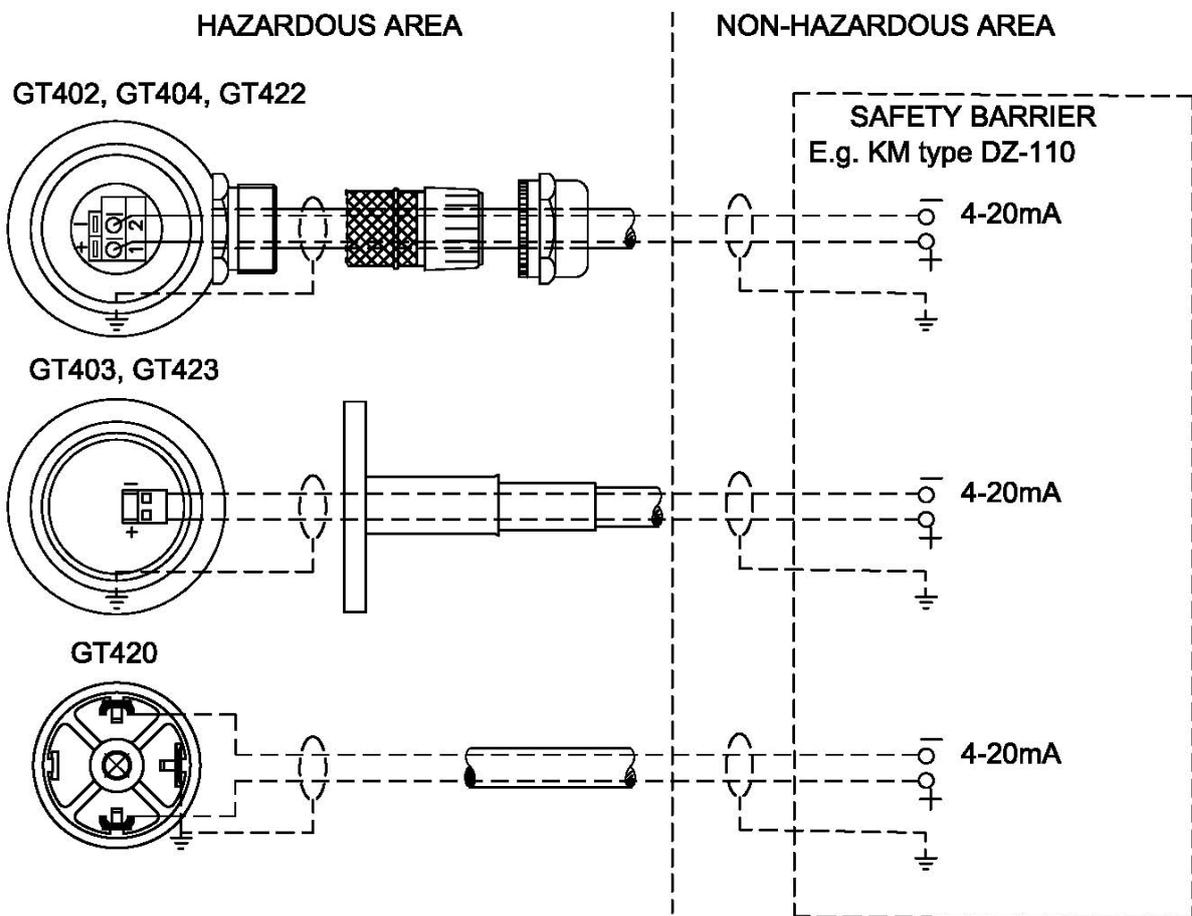


Figure 2: Connection diagram for Ex-area installations

SPECIAL CONDITIONS FOR SAFE USE

The system must be depressurized before assembly of the pressure transmitters.



Compliance with the Essential Health and Safety Requirements has been assured by compliance with:
CENELEC EN 60079-0 : 2012 and CENELEC EN 60079-11 : 2012

- The stated input values U_i , I_i and P_i are to be regarded as individual maximum values. It is a precondition that the diode safety barrier in the supply circuit has a linear resistive output characteristic.
- When installing titanium sensors, special caution must be taken to avoid ignition hazard due to impact or friction.

For details about safe installation and various solutions for different applications, see the GT400 Series Pressure Sensor Applications Guidelines 369048.

ORDER CODE

GT4 0 2 x x x xxx x x x xxx

OUTPUT SIGNAL
0 = 4-20mA / HART

DESIGN
2 = General use dry area, IP56/66

ACCURACY
(incl. Linearity, hysteresis and repeatability)
A = 0,25 % FRO 0,005%FRO/°C 0 to 60°C
C = 0,50 % FRO 0,060%FRO/°C 0 to 60°C
D = 0,90 % FRO 0,010%FRO/°C 0 to 60°C
E = 0,90 % FRO -30 to 70°C
F = 0,45 % FRO -30 to 70°C

ELECTRICAL AND CABLE CONNECTION
3 = M20 cable gland for diameter 7-12mm
4 = M20+ cable gland for diameter 10-14mm
5 = M25 cable gland for diameter 13-18mm

INPUT AND ZERO POINT
G = Gauge (4mA at atm.pressure)
A = Absolute (4mA at 0 Bar Abs.)
C = Sealed Gauge (4mA at 0,8 Bar Abs.)
H = Sealed Gauge (4mA at 1,0 Bar Abs.)
K = Gauge (4mA at -1,0 Bar Abs.)

PRESSURE RANGE in Bar

0,16 ^{a)}	0,25 ^{a)}	0,4 ^{a)}	0,6	1
1,6	2,5	4	6	10
16	25	40	60	100
160 ^{b)}	250 ^{b)}	400 ^{b)}		

^{a)} Only for gauge
^{b)} Only with accuracy of 0,5 % FRO

OTHER REQUEST
000 NA (default if left blank)
XXX Special request

CALIBRATION CERTIFICATE
0 = Without calibration certificate (default if left blank)
C = With calibration certificate
A = Inmetro certification + calibration certificate
M = Inmetro certification

DISPLAY
0 = Without display (default if left blank)

PROCESS CONNECTION, MATERIAL AND SEALING

Type	Connection	Material	Sealing
D	ISO 228-G1/2A	Titanium gr.2	Viton
K	ISO 228-G1/2A	AISI316	Isolast J9503
L	ISO 228-G1/2A	AISI316	Nitril
V	ISO 228-G1/2A	AISI316	Viton

Sealing temperature properties:
Viton (V70G8) -18 to 200°C
Nitril (N7028) -30 to 100°C
Isolast (J9503) -25 to 240°C (excellent resistance to high temp. and chemicals)
Important: Max. ambient temp. transmitter is 85°C

FEATURES

- Accuracy 0.25 % of FRO**
- Temperature drift < 0.005 % of FRO**/°C
- Pressure ranges from 0.16 to 400 Bar
- HART compatible
- Membrane made of 96 % alumina ceramics
- Body of AISI 316 L or titanium
- Rugged construction

TECHNICAL SPECIFICATIONS

Measuring range:	0.16 to 400 bar
Accuracy*:	See order code
Temperature drift:	See order code
Long term drift:	< 0.3 % /year (% of nom. range)
Output signal:	4 to 20 mA / HART
Output current:	3.8 mA < I_o < 21.6 mA
Output current at fault:	$I_o \leq 3.6$ mA
Power supply:	24 VDC (12 to 32 VDC depending on load resistance)
Load resistance:	0 to 1150 ohm depending on power supply
Ex classification:	ⓂII 1 G Ex ia IIC T5 Ga
Ex certification:	NEMKO 02ATEX119X IECEX NEM 12.0008X NCC14.02980X (Inmetro)
Environmental standards:	IACS E10 CISPR 22
Operating temperature:	- 45 °C to + 85 °C
Storage temperature:	- 50 °C to + 100 °C
Materials	
Body:	AISI 316 / Titanium gr.2
Membrane:	96 % alumina ceramics
Gasket:	See order key
Protection grade:	IP 56 (gauge transmitter) IP 66/67 (abs. transmitter)
Weight:	0.4 kg
Cable gland:	M20, M20+ or M25
Safety data	
Max. input voltage:	$U_i = 28$ VDC
Max. input power:	$P_i = 0.85$ W
Max. input current:	$I_i = 150$ mA
Max. internal capacitance:	$C_i = 22$ nF
Max. internal inductance:	$L_i = 4$ μH
Type approvals:	ABS, BV, CCS, DNV-GL, LRS, NK, RINA, RMRS

* Including non-linearity, hysteresis and repeatability at 22 °C.

** FRO = Full Range Output

Specifications subject to change without any further notice.

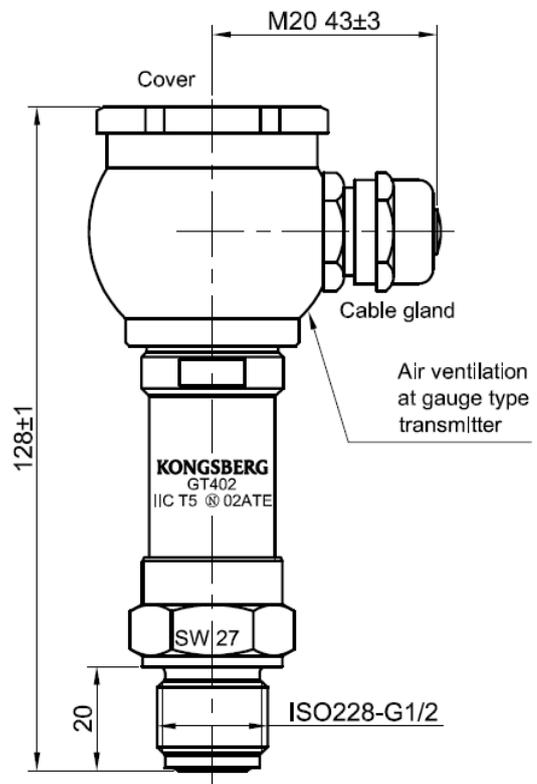


Figure 3: Dimensional sketch of GT402