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PRESSURE TRANSMITTER TMG – Z/JB

INSTRUCTIONS FOR OPERATING, ASSEMBLY AND MAINTENANCE

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Transmitter description

The transmitters are designated for universal use. By means of them, it is possible to measure both overpressure and underpressure in liquid and also gas media which are chemically non-aggressive. The absolute version enables pressure measuring against vacuum and thus includes also measuring of barometric air pressure. For this measuring, there are transmitters with specially adjusted range with suppressed zero. Differential transmitters are designated only for gas non-aggressive media.

The casing is made from brass with nickel surface finish. The connecting thread itself has dimensions M12x1,5. It is possible to order a version with a reduction with the thread G1/4", G1/2" or M20x1,5. The medium can come into contact with some of these materials: brass, glass, silicon, ceramics, silicone rubber, Viton. The electric connection is executed by means of a tight arrested connector with a cable bushing PG9 for connecting a cable with the diameter 6÷9 mm.

Two types of piezoelectric sensors are used for pressure reading – silicon or ceramic. From the point of view of pressure ranges, silicon membranes are used for lower pressures and ceramic for higher ones. Silicon sensors do not have, contrary to the ceramic ones, the measuring membrane galvanically separated from the power supply, but it is possible to achieve higher pressure overload capacity. Ceramic sensors are suitable only for relative and absolute pressure measuring.

Electric signal from the sensor, which is proportional to the applied pressure, is strengthened, filtered, calibrated and transferred to the required output quantity. Pressure transmitters series Z are standardly produced with the current output 4÷20 mA in the connection two wire. A special range 0,2÷1 mA is used with the change-over unit MTA 3042. For power supply of the transmitters, it is possible to use intrinsically safe voltage 10÷22 Vdc from the monitoring systems MTA 11, Venturon a Transmitton.

Technical data

Version for the device group I M1: I M1 Ex ia I

- Nominal pressure ranges $\pm 2,5$ kPa up to 40 MPa
- Maximum overpressure
 - up to 40 kPa 100 kPa
 - from 60 kPa to 40 MPa 200 % of the nominal range, max. 60MPa
- Setting error max 1 % (0,5 %)
- Temperature error of zero typ. 0,2 % (max. 0,3 %) / 10 °C
- Temperature error of the range typ. 0,2 % (max. 0,3 %) / 10 °C
- Compensated temperature range 0÷70°C
- Operating temperature range - 15 to + 85°C
- Storage temperature - 25 to + 100°C
- Power supply voltage 22 Vdc z PNS 02, PNS 03 a PNS 04
10 Vdc from the system Venturon, Transmitton
- Corresponds to standards ČSN EN 60079-0 ed.3, ČSN EN 60079-11 ed.2
ČSN EN 60079-26 ed. 2, ČSN EN 50303
- Output 4 to 20 mA two wire 0,2 to 1 mA three wire
- Operating position is arbitrary
- Coverage IP 54
- Weight 270 g
- Corresponding pressure for the dif. version max. 1 MPa
 - $U_i = 22$ V
 - $C_i = 240$ nF
 - $L_i \approx 0$
 - Ambient temperature $0^\circ\text{C} \leq T_a \leq 60^\circ\text{C}$

Version for the device group II 1G :II 1G Ex iaIIB T4

The technical data are identical to the ones for the device group I M1 except the below mentioned data :

- Power supply voltage Ze ZS-030 – of the intrinsically safe isolating element and regulated power supply.
- Output – only F 4 – 20 mA two wire

Marking

TMxG xxx Z 3x/JB 1 234 56 7

1 – way of pressure measuring	– – relative overpressure D – differential A – absolute V – relative underpressure
2 - exponent of pressure range	3 – 10^3 Pa (units kPa) 4 – 10^4 Pa (tens kPa) 5 – 10^5 Pa (hundreds kPa) 6 – 10^6 Pa (units MPa)
3 – multiplicand of pressure range	1 – 1,0 2 – 1,6 3 – 2,5 4 – 4,0 6 – 6,0
4 –type of used membrane	8 – silicon 7 – ceramic
5 –electric connection	3 – connector DIN 43650
6 –type of electric output	F – current – two wire 4 to 20 mA G – current – three wire 0,2 to 1 mA
7 -version Ex	JB – intrinsically safe

Outputs assignment

	Two wire 4 to 20 mA	Three wire 0,2 to 1 mA
+ power supply voltage	1	3
- power supply voltage	2	2
output		1
shield	⊥	⊥

Instructions for use

- ◆ Before the transmitter is connected to the pressure circuit, it is necessary to check whether the measured pressure corresponds with the nominal range of the transmitter. Even a short-term overload over the maximum allowed overpressure can cause

destruction of the measuring membrane. With the differential transmitter, the user has to secure that the transmitter is not one-sidedly overloaded by higher pressure than the allowed non-destructive pressure for the nominal range.

- ◆ In case of using other media than air, nitrogen, water, oil and ethyl alcohol, it is necessary to verify the materials resistance
- ◆ Teflon and tow are used for sealing to the thread. For liquid media, it is necessary to pay higher attention because screwing to a closed thread can cause pressure increase and thus destruction of the membrane.

Way of ordering

The order must include the transmitter type, required pressure range, the way of pressure measuring (relative overpressure – underpressure, differential, absolute, barometric), the type of electric output.

Transmitter disposal

When the use of a transmitter is finished, this becomes electric waste within the Waste Act No. 185/2001Sb (and its subsequent changes 477/2001Sb, 76/2002Sb, 275/2002Sb, 320/2002Sb, 167/2004Sb, 188/2004Sb, 317/2004Sb a 7/2005Sb). The user is obliged to secure the transmitter disposal according to the regulations valid in the time of the disposal, best by handing the transmitter over to a person competent to this activity.