



PRESSURE TRANSDUCER TMG – N/JB

OPERATION, ASSEMBLY AND MAINTENANCE INSTRUCTIONS

Archive number : 205002.04
Registration number : 01211.3315.8.02.04
Date : July 2022

Number of sheets : 5

Sheet number : 1

Pressure transducer Description

This Pressure transducer can be widely used in the field of measurement and regulation in the field of low and very low pressures, i.e. mainly in the field of ventilation systems, controlled combustion systems, air conditioning, natural ventilation, etc. The pressure transducer is designed for differential pressure measurement and thus also covers the requirement for measuring relative pressures. It is not designed for measurements at high compliance pressure, e.g. measurements on flow throttling element in pressure distribution systems. Special attention should be paid to the design for measuring absolute, and thus barometric pressure, the changes of which are essential for many industrial processes, or for the objective automated recording of ambient conditions. For these measurements, sensors with a specially modified range with a suppressed zero are produced. The measured medium can be a non-aggressive gas. The application of any aggressive media is prohibited.

The entire pressure transducer, i.e. the pressure sensor, the power supply, compensation and amplification circuits, as well as the filter to increase interference immunity, are housed in an antistatic plastic box made of polyester. The pressure inlets are implemented by nickel-plated brass outlets with a diameter of 6 mm, which are suitable for inserting the hose. In addition, the medium comes into contact with silicon, silicone rubber and polyetherimide plastic.

For electrical connection to the measuring circuit, a tight locked connector of the DIN 43650 type with a PG9 size cable gland is used, which allows the use of a cable with a diameter of max. 9 mm.

The pressure of this pressure transducer is measured using a sensor with a silicon membrane, the measuring principle is piezoelectric. As a result, the pressure transducer achieves a high overload capacity, is vibration-resistant and can operate in any position. For some applications, the ability to measure both vacuum and overpressure with a single pressure transducer is an indisputable advantage. The electronics are implemented using surface mount technology.

The output signal that carries information about the pressure difference at the input is current or voltage. The pressure transducers are available in two-wire versions of 4 to 20 mA or three-wire with special ranges of 0.2 to 1 mA and 0.05 to 1.0 V. DC voltage of 8.5 to 24 from intrinsically safe sources can be used to power the pressure transducers. A change in the supply voltage in these ranges has virtually no effect on the accuracy of the measurement.

The pressure transducer is firmly calibrated to the desired range. Fine adjustment (by approx. 2%) of the end points of the conversion characteristic can be done using multi-turn trimmers, which are accessible by unscrewing the pressure transducer housing cover. The trimmer for setting the start of the range (zero) is marked in red. There are also short-circuit jumpers under the cover for selecting the time constant of damping.

We recommend using standardized pressure ranges, but any range within the range of specified pressures can be set by agreement, including symmetrical and unsymmetrical vacuum – overpressure combinations.

Technical data

◆ Nominal pressure ranges	
◆ - differential	± 100 Pa to ± 100 kPa
◆ - relative	up to 1 MPa
◆ - barometric	80 to 120 kPa
◆ Maximum overpressure	
◆ - up to 2 kPa	20 kPa
◆ - from 2 kPa to 20 kPa	50 kPa
◆ - from 20 kPa to 100 kPa	300% of the nominal range
◆ - over 100 kPa	200% of nominal range
◆ Setting error	max 1 % (0.5 %) ± 2Pa
◆ Zero temperature error	typical 0.2%, max. 0.3%/10°C
◆ Temperature Error Range	typical 0.2%, max. 0.3%/10°C
◆ Compensated temperature range	0 to 70° C

◆ Operating temperature range	- 20 to +60°C
◆ Storage Temperature	- 25 to +100°C
◆ Supply voltage F, G	10 to 24 V DC from an intrinsically safe source
◆ Supply voltage H	8.5 to 24 V DC from an intrinsically safe source
◆ Supply Current – Output G,H	type. 4.5 mA
◆ Output	4 to 20 mA twowire, 0.2 to 1 mA and 0.05 to 1.0 V threewire
◆ Working position	arbitrary
◆ Coverage	IP 65
◆ Weight	400 g
◆ Design	I M1 Ex ia I
◆ Conforms to standards	ČSN EN 60079-0 :2013 + A11:2014, ČSN EN 60079-11:2012 ČSN EN 50303:2001
◆ $U_i = 24 \text{ V}$	
◆ $C_i = 240 \text{ nF}$	
◆ $L_i = 80 \text{ } \mu\text{H}$	
◆ Ambient temperature $0^\circ\text{C} \leq T_{\text{and}} \leq + 60^\circ\text{C}$	

Version for device group II 1G Ex ia IIB T4

The technical data are the same as for equipment group I M1 except for the data below:

◆ Output - F only	4 – 20 mA twowire
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Marking

T M x G x x 8 N 3 x / JB
1 2 3 4 5 6 7 8

1 Pressure Measurement Method	- – differential A – absolute V – vacuum
2 Pressure range exponent	2 – 10^2 Pa (hundreds of Pa) 3 – 10^3 Pa (kPa units) 4 – 10^4 Pa (tens of kPa) 5 – 10^5 Pa (hundreds of kPa)
3 Pressure range multiple	1 – 1,0 2 – 1,6 3 – 2,5 4 – 4,0 6 – 6,0
4 Type of membrane used	8 – Silicon
5 Case material	N – polyester
6 Electrical Connection	3 – DIN 43650 connector
7 Electrical Output Type	F – current – two conductor 4 to 20 mA G – current – triconductor 0.2 to 1 mA H – Voltage – 3-wire 0.05 to 1 V
8 – Ex type	JB – intrinsically safe

Instructions for use

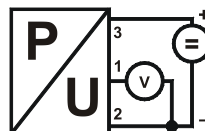
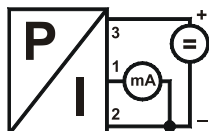
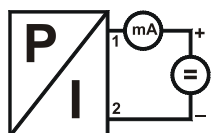
- ◆ Before connecting the pressure transducer to the pressure circuit, it is necessary to check that the measured pressure corresponds to the nominal range of the pressure transducer. Even a short-term overload above the maximum allowable overpressure can cause the destruction of the measuring diaphragm!
- ◆ When measuring the pressure of media other than non-aggressive gases, it is necessary to check the resistance of the materials.
- ◆ When measuring a liquid medium, do not allow it to freeze – there is a risk of destroying the measuring sensor.

Wiring diagram

F – Double conductor 4 to 20 mA

G – three-wire 0.2 to 1 mA

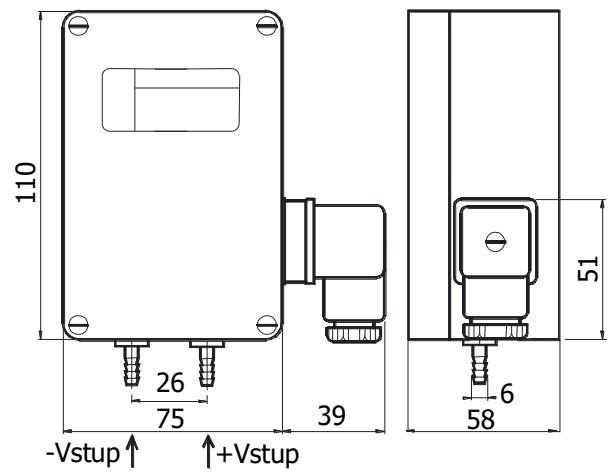
H – three-wire 0.05 to 1 V



Assign pins

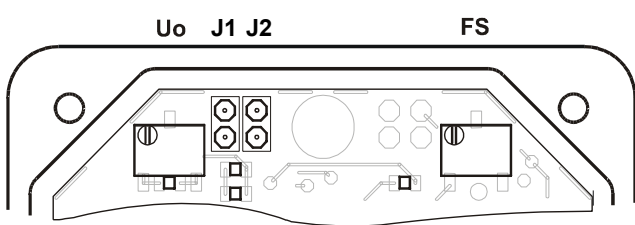
	Two-wire 4 to 20 mA	Three-wire 0.2 to 1 mA	Three-wire 0.05 to 1 V
+ Supply voltage	1	3	3
- Supply voltage	2	2	2
Output		1	1
Shielding	⊥	⊥	⊥

Dimensions



Adjustment elements

Under the cover, setting the damping time constant



τ (S)	0	1	2	3
J1	OFF	ON	OFF	ON
J2	OFF	OFF	ON	ON

Ordering method

In the order, it is necessary to specify the type of pressure transducer, the required pressure range, the method of pressure measurement (differential, absolute, barometric), the type of electrical output. A polyethylene or silicone tubing with a diameter of 5 mm of the desired length can be supplied as an accessory.

Repairs

Any repairs can only be carried out by the manufacturer, Cressto s.r.o

Disposal of the pressure transducer

By terminating the use of the pressure transducer, it becomes electrical waste within the meaning of the Waste Act No. 185/2001 Coll. (and its subsequent amendments 477/2001 Coll., 76/2002 Coll., 275/2002 Coll., 320/2002 Coll., 167/2004 Coll., 188/2004 Coll., 317/2004 Coll. and 7/2005 Coll.). The user is obliged to ensure the disposal of the pressure transducer in accordance with the regulations in force at the time of disposal, preferably by handing over the disposed pressure transducer to a person authorized to do so.