PIEZUS

PRESSURE TRANSMITTER
APZ 4420

Operations Manual
www.piezus.ru

This Operations Manual covers APZ 4420 pressure transmitters (hereinafter referred to as "the transmitter" or "product") and contains the performance data, connection instructions and other information for correct operation and maintenance.

The transmitters are manufactured as per TU 4212-001-7722857693–20 in both standard and explosion-proof versions – RU C-RU.АЯ45.В.00110/22 Certificate.

Explosion-proof transmitters are equipped with the intrinsically safe circuit explosion protection of "ia" level (labeled as 0Ex ia IIC T4 Ga X). X sign, that follows Ex- labeling means that operations with the products require for observing the special conditions listed in Items 2.2 and 2.3.

The complete list of transmitters performance data is given in its technical specifications (www.piezus.com).

The sign indicates the important information that requires special focus.

1 Device and Operation

1.1 These products belong to contact transmitters and provide the continuous conversion of measured pressure values into standardized unified analog output current signals from 4 to 20 mA.

1.2 Designated area – monitoring systems for abrasive media (rock, pulp, concrete, sludge) in various industrial branches.

2 Performance

2.1 Major Specifications

2.1.1 Measuring range (MR) and the basic error are indicated on the transmitter label and in the data sheet.

2.1.2 The measuring ranges to choose from are shown in Table 1.

Table 1 – Measuring Ranges

Pressure range, psi	Overpressure, psi	Burst pressure, psi
0...5000	7500	10000
0...6000	9000	12000
0...10000	15000	20000
0...15000	22500	30000

2.1.3 The output signal parameters correspond to Table 2.

Table 2 – Analog output signals

Ordering code	Output signal	Power supply (Upower)	Load resistance	Power consumption
A	4...20 mA/2-wire	10...32 V	≤ 1000 Ohm	< 26 mA
Q*	4...20 mA/2-wire	14...28 V	≤ 1000 Ohm	< 26 mA

*Explosion-proof transmitter version.

2.1.4 The transmitter weight (w/o cable), less than – 2.1 kg.

2.2 Operating Conditions:

– atmosphere pressure from 84 to 106.7 kPa (Group P1, GOST P 52931);
– ambient air temperature: from -40 to +125 °C (Ex version: from -40 to +85 °C);
– process temperature: from -40 to +125 °C (Ex version: from -40 to +85 °C);
– The transmitter measuring cell should not contact with fluid media aggressive to stainless steel;

– The explosion-proof product version can be used in explosion hazardous zones of Classes 0, 1, 2 as per GOST IEC 600/9-10-1-2011, in accordance with the assigned explosion-proof marking.

The ingress protection rating of the transmitter is IP67.

2.3 The "ia" Type Explosion Protection

2.3.1 Transmitters are powered from intrinsically safe barrier circuits (power units), located outside explosion hazard zones. These devices shall have the effective certificate confirming intrinsically safe circuit "ia" explosion protection type and protection rating for relevant explosive mixtures.

2.3.2 The input intrinsically safe parameters for pressure transmitters are given in the Table 3.

Table 3 – Intrinsically Safe Circuit Parameters

Parameter	Value
Maximum voltage, Ui	28 V
Maximum current, Ii	93 mA
Maximum power, Pi	660 mW
Maximum internal inductance, Li	10 μH
Maximum internal capacitance, Ci	25 nF
Maximum DC voltage or effective value of AC voltage, Um	28 V

3 Safety Measures

3.1 Operations, maintenance and calibration activities shall be conducted as per GOST 12.3.019 requirements, Operational Code for Consumer Electrical Installations and Industrial Safety Rules for Operations on Consumer Electrical Installations.

3.2 As for the method of people protection against electric shock the products comply with Class III per GOST 12.2.007.0 (w/o dangerous voltage).

3.3 All the activities on circuit connection must be conducted only with the supply voltage switched off.

NEVER USE the product in corrosive media containing acids, alkalies, oils, etc.

4 Installation Instructions

4.1 Operating position is any installation-, dismantling -and maintenance – friendly. The condensate draining to the transmitter's cable input must be excluded.

4.2 The transmitter's circuits are connected via the connector as per the circuit diagrams shown in Fig. 1 or Fig. 2. The diagrams include intrinsic safety barriers to ensure transmitter explosion-proof use (Fig. 2).

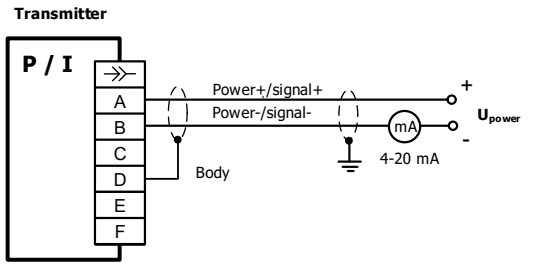


Fig. 1 – A connection diagram for outputs of 6-pin MIL-/Bendix connector (type PT02-E10-6P-023)

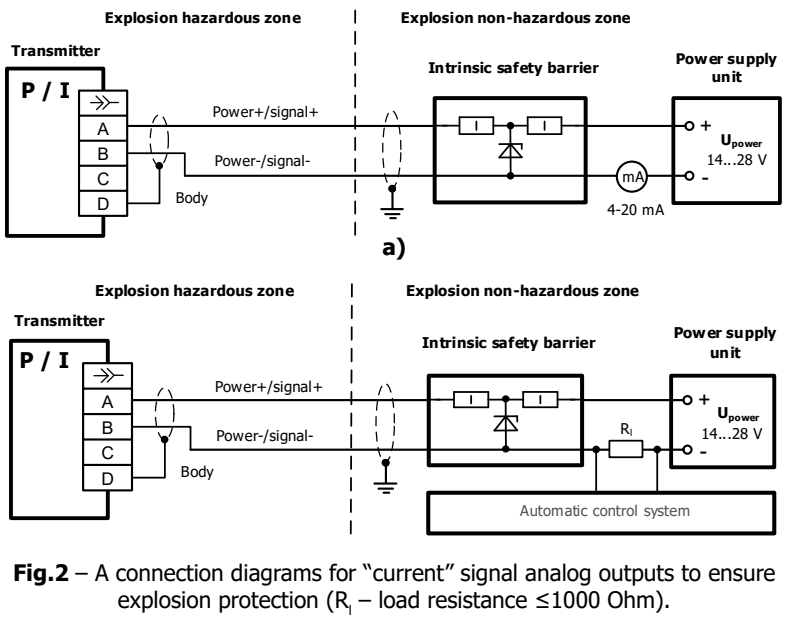


Fig.2 – A connection diagrams for "current" signal analog outputs to ensure explosion protection (R_l – load resistance ≤1000 Ohm).

Observe polarity when connecting circuits (the transmitters are protected against power supply reversed polarity).

5 Operation and Maintenance

Check the diaphragm for cleanliness and electric connections for reliability on a regular basis.

High pressure is prohibited for transmitter cleaning.

DO NOT:

1. **Apply power voltage exceeding the maximum permitted value.**
2. **Apply mechanical impact on the diaphragm with any objects (soft mechanical cleaning is allowed).**
3. **Use transmitters with visual mechanical damages.**
4. **Use transmitters under inappropriate weather conditions.**
5. **Use transmitters if the media temperature and/or ambient temperature is lower or higher than the acceptable limits.**

During its service life, the transmitter is a subject to periodic calibration and verification as per the data sheet.

Complaints regarding pressure transmitters with manufacturer's broken seals and with the defects caused by the violation of operating rules, transportation and storage rules will not be accepted.

Only manufacturer can repair the transmitter.

6 Labeling

The transmitter housing has a label with the information (Appendix A):
1) Manufacturer's trademark;
2) Ordering code;
3) Factory serial number and the date of manufacture;
4) Ingress protection as per GOST 14254;
5) Measuring range;
6) QR-code;
7) Circuit electrical parameters;
8) Certification symbols;
9) The explosion-proof transmitters have additional marking:
   – conformity certificate number;
   – explosion protection designation;
   – explosion protection electrical parameters.

7 Transportation and Storage

7.1 The transmitter can be transported in enclosed vehicles of any type and to any distance, while retail packages may be also placed into transportation packages.

7.2 The transmitter can be transported and stored in the transportation package at the ambient air temperature ranging from -55 to +125 °C, observing shock and vibration protection measures.

8 A Supply Kit

The transmitter is supplied complete with the following items (Table 4).

Table 4 – Supply Package

Description	Qty
APZ 4420 pressure transmitter	1 ea
Passport	1 ea
Operations Manual (this document)	1 copy*
Calibration method MP202-005-2021	1 ea.**
Explosion Protection Manual	1 ea.*
Optional accessories	1 kit**

* Supplied on a special order. Soft copies of the documents can be downloaded from the manufacturer's website.
** It is supplied by special order.

9 Service Life and Lifetime

8.1 24/7 operation mode.

8.2 Mean time between failures, not less than – 120 000 hours.

8.3 Mean life time – 12 years (this reliability factor was set for standard operating conditions: non-corrosive medium, temperature +23 ±3 °C, no vibration and shaking).

Disposal Data

The product does not contain precious metals and it is environmental-friendly: it does not pose a threat to human health, an operator shall determine the disposal procedure.

Appendix A

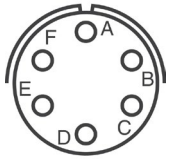
The appearance of pressure sensors

During transportation, transmitter contacts are capped.

◄ WEKO® 2" (1502)

Appendix B

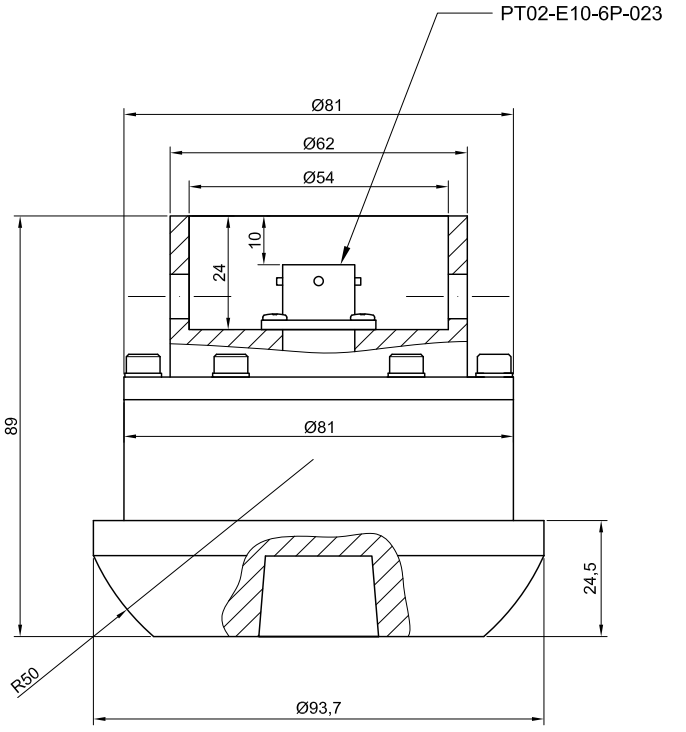
PIN assignment

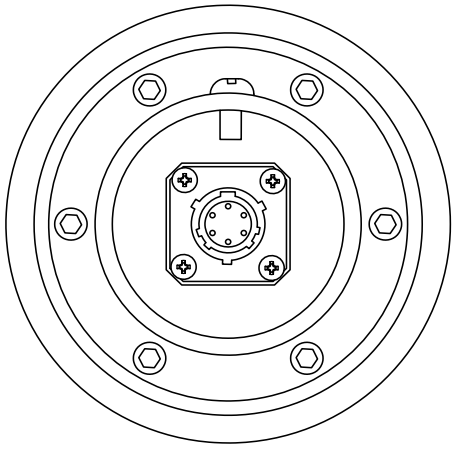


PT02E-10-6P-023
E and F additional contacts are used for product calibration

Appendix C

Dimensions





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