

**MEASURING CONVERTORS
OF TEMPERATURE AND HUMIDITY
POCA-10/M3, POCA-10/M4**

Operation Manual

НКГЖ.414614.003РЭ



CONTENT

1. Introduction	3
2. Description and operation	3
2.1. Purpose of the devices	3
2.2. Technical characteristics	5
2.3. Provision of explosion protection	10
2.4. Design and operation	11
2.5. Marking	15
2.6. Packaging	15
3. Use of devices according to their purposes	16
3.1. Preparation of devices for usage	16
3.2. Operation of the instruments	19
4. Verification technique	21
5. Technical maintenance	30
6. Storage	32
7. Transportation	32
Appendix A. Overall, connection and mounting dimensions of measuring converters of temperature and humidity POCA-10.....	33
Appendix B. An example of designation recording when ordering...	35

1. Introduction

The operation manual contains information concerning construction, operation principles, features of the measuring converters of temperature and humidity POCA-10/M3, POCA-10/M4 (hereinafter - POCA-10) and guidelines to its correct and safe operation.

2. Description and operation

2.1. Purpose of the devices

2.1.1. Measuring converters of temperature and humidity POCA-10 are designed for measuring of temperature, relative humidity, dew point temperature, absolute humidity and content of humidity in gaseous, including aggressive media and constant conversion of their values into unified electrical output direct current signal.

2.1.2. POCA-10 is used for measuring of hygrometric characteristics of gases in the systems of automatic control, regulation and management of technological processes in industry, energetics, agriculture.

2.1.3. POCA-10 possesses:

- versions:
 - general industrial with the code POCA-10;
 - explosion proof with the type of explosion protection «intrinsically safe electrical circuit» with addition to their code of the index «Ex»;
 - increased reliability for operation at APP with the addition to their code of index «A».
- embodiments:
 - versions of channel assembly (POCA-10/M3) and wall mount (POCA-10/M4);
 - with liquid-crystal display (ЖКИ).

POCA-10 are manufactured also in combination of the above types of versions.

2.1.4. In accordance with State Standard 22520-85 POCA-10 is:

- according to the number of input channels - two channel;
- according to the number of output channels - two channel;
 - with two lead-in wires 4-20 mA;
- according to dependence of output signal on input signal – with a linear dependence.

2.1.5. POCA-10 may be connected to the computer with the aid of the interface RS 232 for calibration. Calibration of POCA-10 includes:

- selection of the measured value for every output channel;
- selection of the displayed value;
- assignment of conversion ranges;
- selection of the type of dependence of output signal on input signal (increasing with output unified signals 4-20 mA or decreasing with output unified signals 20-4 mA);

- the task of value of pressure for calculation volume water content;
- setting of the number of averagings (time of damping).

2.1.6. In POCA-10 the protection from reverse polarity of feeding voltage is provided..

2.1.7. Explosion proof converters POCA-10Ex, POCA-10AEx, correspond to requirements of State Standards P 51330.0-99, State Standards P 51330.10-99, possess especially explosion proof level of explosion protection, provided by the type of explosion proof «intrinsically safe electrical circuit» of the level «ia», and marking of explosion protection ExiaIICT6 X.

Explosion proof converters POCA-10Ex, POCA-10AEx are designed for employment in explosion proof zones of the premises and external installations in accordance with certain explosion proof marking, and requirements of the chapter 7.3 ПУЭ, chapter 3.4 ПТЭЭП and other normative documents, regulating usage of electrical equipment in highly explosive zones, where highly explosive mixtures of the category IIC of the group T1 - T6 may be formed.

2.1.8. POCA-10A, POCA-10AEx (increased reliability) are designed for APP, they are earthquake-proof and secure increased protection from electromagnetic fields and a low level of radiation of radio-frequency fields.

2.1.8.1. POCA-10A, POCA-10AEx are used as components of control systems of technological processes in atomic power plants (APP).

In accordance with State Standards 25804.1-83 POCA-10A, POCA-10AEx belong to:

- category B as to the operation mode – the equipment of continuous application;
- the type I as to the number of levels of operation quality – the equipment with two quality degrees of functioning – the nominal level and refusal.

2.1.9. According to POCA-10A, POCA-10AEx (increased reliability) in accordance with НП-001-97 (ОПБ – 88/97) belong to safety categories 2, 3:

- by its purpose – to the elements of normal operation;
- by influencing safety - to the elements important for safety;
- by the nature of performed functions – to controlling elements.

Example of classification designations 2HY or 3HY.

According to stability to mechanical effects during operation POCA-10A, POCA-10AEx belong to the execution group M6 by State Standard 17516.1-90.

POCA-10A, POCA-10AEx belong to the I category of the seismic stability according to НП-031-01 and to the Б group of execution 3 according to ПД 25 818-87.

POCA-10A, POCA-10AEx are durable, steady and resistant to the impact of earthquakes with the level of seismicity of 8 points on the MSK-64 scale at the setting level up to 40 meters.

2.1.10. POCA-10 as to protection from the impact of environment in accordance with:

- State Standards 15150-69 belongs to corrosion proof version T III;
- State Standards 14254-96 possesses the degree of protection from penetration inside of POCA-10 dust and water to IP65.

2.1.11. By climatic impact stability when operating:

- POCA-10, POCA-10Ex, POCA-10A, POCA-10AEx, belong to C2 at the temperature of ambient air from minus 40 up to plus 70 °C (for order index t4070) or C3 at the temperature of ambient air from minus 10 up to plus 70 °C (for order index t1070) in accordance with the State Standard 12997-84;
- POCA-10, POCA-10A – the type of climatic execution T3 according to State Standards 15150-69 at the temperature of ambient air from minus 25 to plus 80 °C (for order index t2580);
- POCA-10Ex, POCA-10AEx – the type of climatic execution T3 according to State Standards 15150-69 at the temperature of ambient air from minus 25 to plus 70 °C (for order index t2570);

2.1.12. According to resistance to electromagnetic interference of POCA-10A relative to State Standards 50746-2000 correspond depending to the version to:

- group of version IV, criteria of quality of functioning A for all kinds of hindrances, except microsecond pulse hindrances of the big energy;
- group of version III, criteria of quality of functioning A for microsecond pulse hindrances of the big energy.

2.2. Technical characteristics

2.2.1. Measured values, ranges of measurements, limits of the tolerable basic error of measurements correspond to the ones provided in the table 1.

Table 1

Measured value	Graphical symbol of value	Range of measurements (D_M)	Limits of the basic tolerable error			
			for unified output signal		for measured value	
			A	B	A	B
Relative humidity	φ	from 0 to 100 %	± 2 %	± 3 %	± 2 %	± 3 %
Absolute humidity (at $t = 20$ °C)	a	from 0 to 18 г/м ³ *	± 2 %	± 3 %	± 2 %	± 3 %
Volumetric humidity content (при $t = 20$ °C)	x	from 0 to 25000·100/P млн ⁻¹ * where P- absolute pressure in кPa	± 2 %	± 3 %	± 2 %	± 3 %
Temperature of dew point	T_D	from minus 40 to plus 80 °C d.p.	± 1 °C** ± 2 °C*** ± 4 °C* ⁴	$\pm 1,5$ °C** ± 3 °C*** ± 6 °C* ⁴	± 1 °C** ± 2 °C*** ± 4 °C* ⁴	$\pm 1,5$ °C** ± 3 °C*** ± 6 °C* ⁴
Temperature	T	From minus 40 to plus 110 °C	$\pm(0,2 + 10^{-3} \cdot D)$	$\pm(0,3 + 10^{-3} \cdot D)$	$\pm 0,3$ °C	$\pm 0,4$ °C

Notes:

1. Tolerable basic error of measurement of absolute humidity and humidity content γ , reduced to the range of conversion, is calculated from the formuls
$$\gamma = \gamma_M \cdot D_M / D,$$
where γ - tolerable basic error for measuring range D_M ;
2. * In case of increase (decrease) of the temperature of analysed gas for 10°C the measuring range is increased (decreased) in 1,8 times.
3. ** - for $T - T_D < 20$;
*** - for $20 < T - T_D < 50$;
*⁴ - for $50 < T - T_D < 60$.

2.2.2. Range of unified output signal: 4-20 or 20-4 mA.

2.2.3. POCA-10 posses linear characteristic of input signal.

Nominal static characteristic of POCA-10 corresponding to the following

$$I = \frac{(A - A_H)}{(A_B - A_H)} \cdot (I_B - I_H) + I_H \quad (2.1)$$

where I - current value of the output signal, mA;

I_B, I_H - upper and lower limiting values of the output signal, mA;

A_B, A_H - upper and lower limits of measurements;

A - magnitude of measured value in the same units as A_B and A_H .

2.2.4. Variation of the input signal does not exceed 0,5 of the limit of the tolerable basic error.

2.2.5. Pulsing of output signal POCA-10 with an output signal of 4-20 or 20-4 mA does not exceed 0,25 % of the upper limit of variation of the output signal at load resistance of 250 Ohm for supply voltage of 24 V and 500 Ohm for supply voltage of 36 V.

2.2.6. POCA-10 is tolerable to an impact of sinusoidal vibrations of high frequency (with turnover frequency from 57 to 62 Hz) with the following parameters:

- frequency (5...80) Hz;
- amplitude of shift for the frequency below the turnover frequency 0,15 mm;
- amplitude of acceleration for the frequency above the turnover frequency $19,6 \text{ m/s}^2$.

The limit of the tolerable complementary error of POCA-10 during the impact of vibration does not exceed the limit of the tolerable basic error.

2.2.7. The complementary tolerable error of POCA-10 caused by a temperature variation of ambient air from the normal $(20 \pm 5) \text{ }^\circ\text{C}$ up to any temperature within the range of operational temperatures for every $10 \text{ }^\circ\text{C}$ of temperature variation does not exceed 0,5 of the limit of the basic tolerable error.

2.2.8. The complementary error of measured humidity for POCA-10, caused by variation of temperature of analysed gas for every $10 \text{ }^\circ\text{C}$ of temperature variation within the range of temperature measurements, does not exceed 0,5 of the limit of the tolerable basic error.

2.2.9. The complementary error POCA-10, caused by the influence of high dampness, does not exceed 0,2 of the limit of the tolerable basic error.

2.2.10. The complementary error of POCA-10, caused by the effect of constant magnetic fields and (or) variation fields of the circuit (industrial) frequency of up to 400 A/M voltage, does not exceed 0,2 limit of the tolerable basic error.

2.2.11. The power supply of POCA-10 is carried out from the direct current power sources with voltage from 12 to 36 V at nominal value of $(24^{+0,48}_{-0,48}) \text{ V}$ or $(36^{+0,72}_{-0,72}) \text{ V}$.

2.2.12. The power, consumed by POCA-10, does not exceed:

- 1,4 V·A for supply voltage 24 V,
- 2 V·A for supply voltage 36 V;

2.2.13. Complementary error caused by smooth variation of the power supply voltage from minimum 12V to maximum value 36V, does not exceed 0,2 of the limit of tolerable basic error.

2.2.14. In case of an abrupt jump of power supply from the nominal one within the limits provided in the item 2.2.13, an outburst of output signal not exceeding 1,5 % of the range of variation of the output signal with duration not more than 1 sec.

2.2.15. Load resistance should not exceed values in the table 2.

Table 2

Range of uniform output signal, mA	Power voltage, V	Load resistance, not more than
4-20	24	500 Ohm
20-4	36	1 kOhm

2.2.15.1. Maximum load resistance $R_{H \max}$, kOhm at the supply voltage within the range from 12 to 36 V is computed by the formula

$$R_{H \max} = \frac{U - U_{\min}}{I_{\max}}, \quad (2.2)$$

When U - voltage of supply voltage, V;

$$U_{\min} = 12 \text{ V};$$

$$I_{\max} = 24 \text{ mA}.$$

2.2.16. After connection of any loads of external load not exceeding the values provided in the item 2.2.15, the basic error of POCA-10 and variation of the output signal meet the requirements of the items 2.2.1 and 2.2.4.

2.2.17. The time of setting of the output signal is not more than:

- for the channel of humidity measuring 5 min;
- for the channel of temperature measuring 10 min.

2.2.18. POCA-10 possesses durability and tightness during test pressures of up to 2,5 mPa.

2.2.19. Electric resistance of insulation of power supply circuit of POCA-10 relative to its body is not less than:

- 20 mOhm at the temperature of ambient air $(20 \pm 5)^\circ\text{C}$ and relative humidity from 30 % up to 80 %;
- 5 mOhm at the uppermost value of temperature of operational conditions and relative humidity from 30 % up to 80 %;
- 1 mOhm at the uppermost value of relative humidity of operational conditions and temperature of ambient air $(35 \pm 3)^\circ\text{C}$.

2.2.20. Insulation of the supply circuit of POCA-10 relative to the body withstands during 1 minute an effect of the test voltage of practically sinusoidal form with the frequency from 45 to 65 Hz:

- 120 V at the temperature of ambient air $(20 \pm 5)^\circ\text{C}$ and relative humidity from 30 to 80 %;
- 500 V for intrinsically safe circuit;
- 90 V at the temperature of ambient air $(35 \pm 3)^\circ\text{C}$ and relative humidity (95 ± 3) or 98 % depending on climatic version.

2.2.21. Overall dimensions, connecting and mounting dimensions of POCA-10 correspond to dimensions in appendix A.

The length of the operating part L, mm:

POCA-10/M3: 100, 160, 200, 250, 320, 400, 500, 630, 800, 1000;

POCA-10/M4: 246,5.

2.2.22. The mass of POCA-10 is from 0,4 to 1,0 kg. depending on the version.

2.2.23. POCA-10 tolerate temperature of ambient air in extended area indicated in the item 2.1.11.

2.2.24. POCA-10 tolerate humidity:

- up to 95 % at the temperature of 35 °C and lower temperatures, without moisture condensation for the climatic version C3 according to State Standard 12997-84;
- up to 98 % at the temperature of 35 °C and lower temperatures, without moisture condensation for the climatic version C2 according to State Standard 12997-84 and T3 according to State Standard 15150-69.

2.2.25. POCA-10 in transportation packing withholds the temperature up to +60 °C.

2.2.26. POCA-10 in transportation packing withholds the temperature up to minus 50 °C.

2.2.27. POCA-10 in transportation packing withholds influence of environmental relative humidity of 98 % at the temperature of 35 °C.

2.2.28. POCA-10 in transportation packing are stable against shock jolting with the number of shocks 80 per one minute, mean quadratic value of speed-up of 98 m/c² and time of action about 1 hours.

2.2.29. POCA-10A, POCA-10AEx possess durability and stability to an impact of sinusoid vibration within the frequency range from 1 to 100 Hz at the amplitude of vibro - acceleration of 20 m/sec².

2.2.30. POCA-10A, POCA-10AEx have no structural components and units with resonance frequencies from 5 to 25 Hz.

2.2.31. POCA-10A, POCA-10AEx possess durability and stability to an impact of mechanical shocks of solitary action with a peak shock acceleration of 20 m/s², with a duration of shock impulse from 2 to 20 msec and a total number of shocks – 30.

2.2.32. POCA-10A, POCA-10AEx are tolerable and durable to influence of multiple mechanical shocks with a peak shock acceleration of 30 m/sec², with a preferable duration of shock impulse 10 msec (permissible durability – from 2 to 20 msec) and a total number of shocks in every direction – 20.

2.2.33. POCA-10A, POCA-10AEx is durable to seismic impact, equivalent to an impact of vibration with parameters indicated in table 3.

Table 3

Frequency Hz.	1,0	2,0	3,0	4,0	5,0	6,0	8,0	10,0	15,0	20,0	30,0
Acceleration , m/s ²	6,0	15,0	29,0	51,0	48,0	43,0	38,0	31,0	20,0	19,0	14,0

2.2.34. Provision of electromagnetic compatibility and disturbance immunity

2.2.34.1. By tolerance to electromagnetic disturbances POCA-10A, POCA-10AEx according to State Standards P 50746-2000:

- group of version IV, criteria of quality of functioning A for all kinds of hindrances, except microsecond pulse hindrances of the big energy;
- group of version III, criteria of quality of functioning A for microsecond pulse hindrances of the big energy.

2.2.34.2. POCA-10A, POCA-10AEx function normally and does not create any disturbances in conditions of joint operation with equipment of systems and components for that they are designed as well as with equipment for other purposes, which may be used together with this converters in a typical disturbance situation.

2.3. Provision of explosion protection

2.3.1. Power supply of explosion proof converters POCA-10Ex, POCA-10AEx is provided from intrinsically safe direct -current sources with 24 V voltage or power supply sources complete with of the multichannel thermometer TM 5122Ex (or БППС 4090Ex, ИПМ 0399Ex/M3) with the level of explosion protection “especially intrinsically safe”.

There is a limiting resistor in the circuit, as well as a safety fuse, protection diode from polarity change.

Mark «X», following the explosion proof marking, denotes, that during operation of converters it is necessary to follow the following requirements:

- converters should be operated with power sources and recording equipment, possessing intrinsically safe electric circuit of the level «ia» and electrical parameters corresponding to electrical equipment of the subgroup IIC;
- during operation it is necessary to take protective measures from increasing temperature of converter components due to heating from measured media above the value tolerable for the temperature category T6.

2.3.2. Output circuits of the intrinsically safe converters POCA-10Ex, POCA-10AEx are designed for connection to intrinsically safe circuits with unified signal of direct current 4-20 or 20-4 mA (circuit of connection of explosion proof converters is provided at the figure 2.5).

2.3.3. The power consumed by intrinsically safe converters POCA-10Ex, do not exceed 1,4 V·A.

2.3.4. Maximal input current does not exceed 120 mA, maximal voltage does not exceed 24 V, maximum internal capacitance and inductance do not exceed 47 nF and 0,2 mGn correspondingly.

Total capacitance and inductance of the converter and the cable communication line do not exceed maximal values for highly explosive mixtures of IIC category.

2.3.5. Insulation between intrinsically safe circuit and the housing or grounded parts of POCA-10Ex withstands test voltage (effective) of alternate current of not less than 500 V.

2.4. Design and operation

2.4.1. POCA-10 is a multifunctional, microprocessor, reconfigured by a customer instrument.



2.4.2. POCA-10 consists of a capacitive humidity sensor, of resistance thermo-converter, protective filter, housing and an electronic device.

2.4.3. The principal of operation of POCA-10 is based on direct relation between the capacitance of the sensor of the converter and relative humidity of surrounding environment with a consequent conversion of the electric capacity of the sensor into an electrical signal of direct current and compensation of temperature dependence.

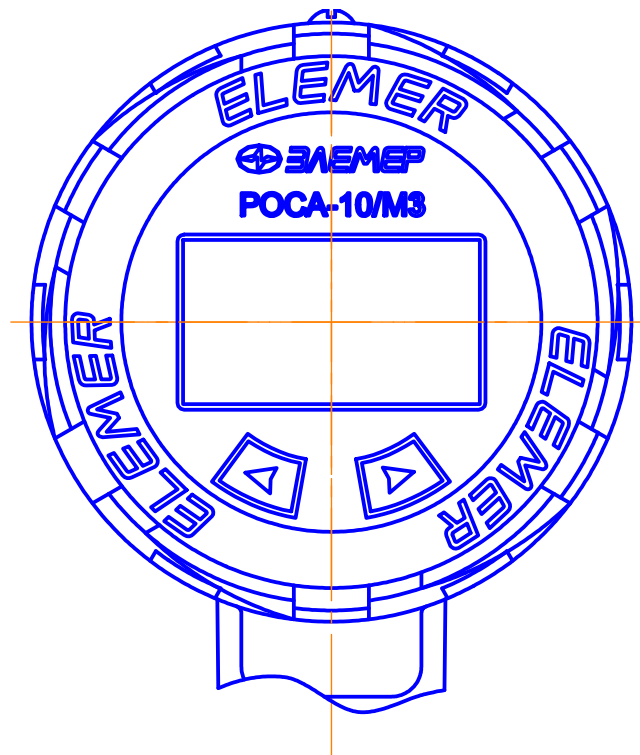
With the aid of POCA-10 conversion of measured values of temperature and relative humidity into absolute humidity value, of the temperature of dew point, and volumetric humidity and their conversion into unified output signal of direct current.

2.4.4. The resistance thermo-converter with HCX Pt500 is used as a temperature sensor.

2.4.5. Sensors of humidity and temperature are located on the end of the immersed part and covered by a metallic cap, providing their protection from mechanical damages and a free access to analysed medium.

2.4.6. There is an panel under the cap of the housing of POCA-10 the following components are located (figure 2.1) keys «», «» for correcting of current outputs.

The front view POCA-10/M3



The front view POCA-10/M4

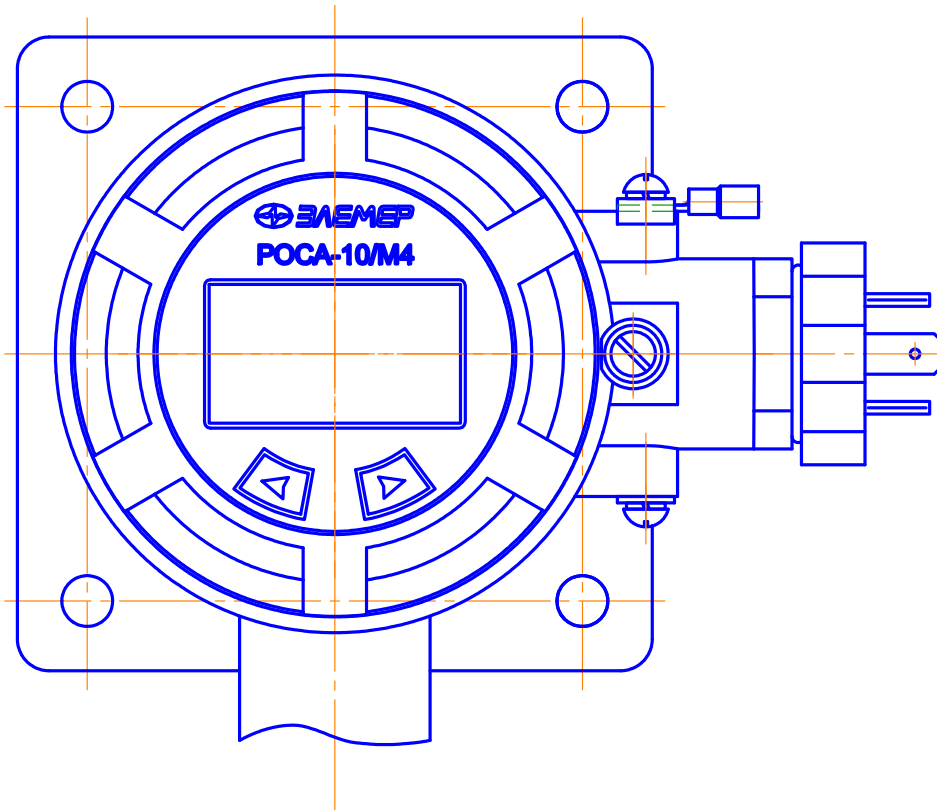
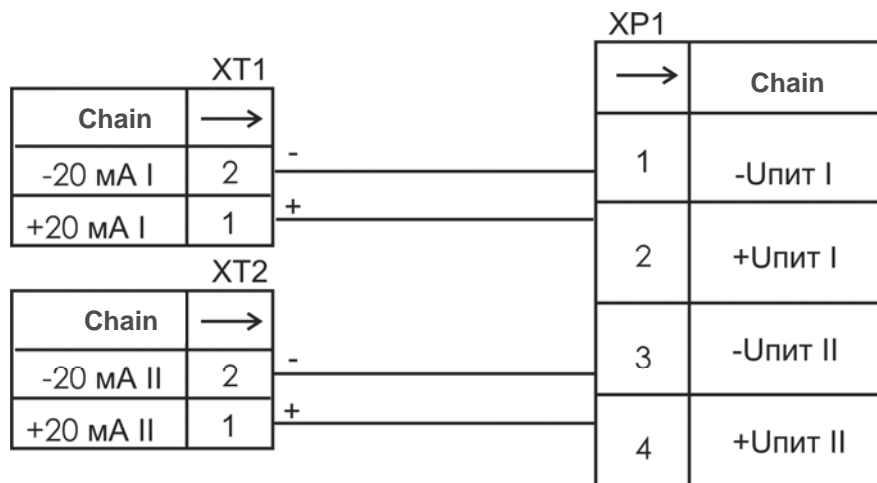


Figure 2.1

2.4.7. The diagram of connection of the connector block with the plug GSP 311 is demonstrated in the figure 2.2.

Diagram of the interappliance connection of the connector block



Picture 2.2 legend:

XT1, XT2 – connector block SMKDS 1/2 - 3.5,

XP1 – plug GSP 311.

Figure 2.2

2.4.8. Disposition of contacts of the connector GSP 311 is shown on the figure 2.3.

The rear view POCA-10/M3 external connector GSP 311

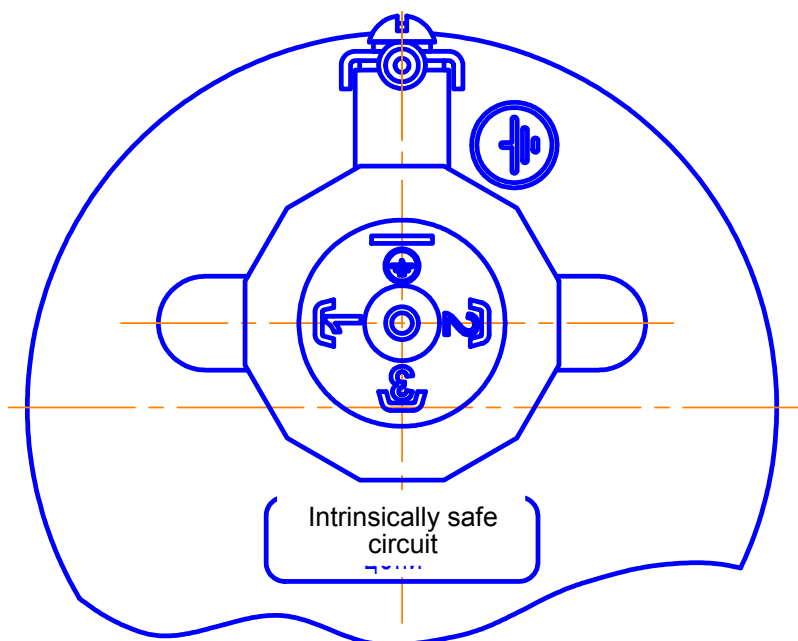
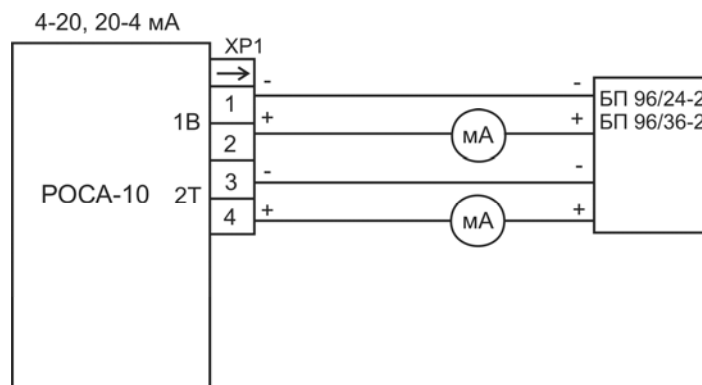


Figure 2.3

2.4.9. Diagrams of electrical connections of POCA-10 represented at the figures 2.4.

**Measuring converters of temperature and humidity POCA-10.
Diagram of electrical connections during measuring by converter POCA-10
of relative, absolute humidity and temperature of dew point**



Picture 2.4 legend:

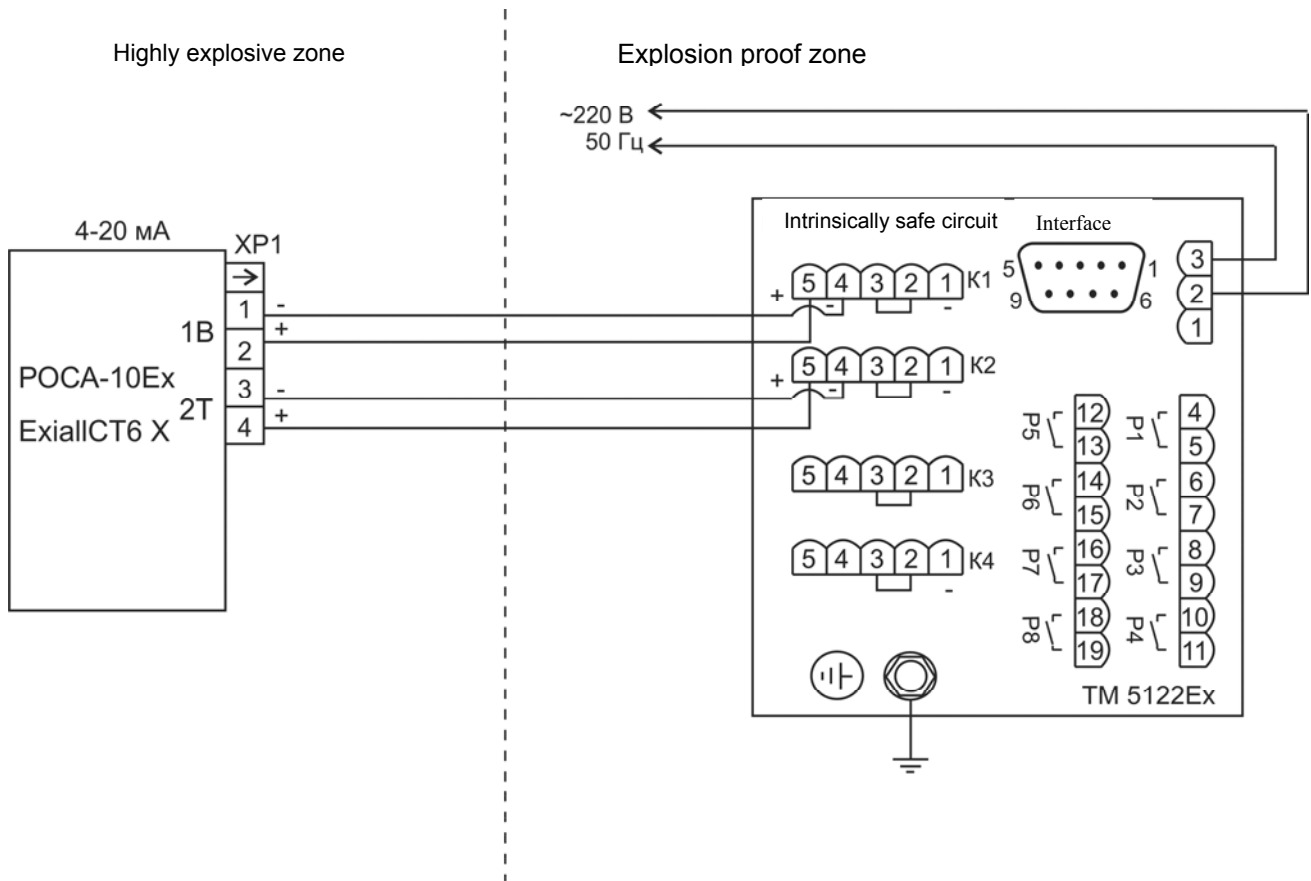
1B – output measuring channel of humidity;
2T – output measuring channel of temperature;

Figure 2.4

Notes. As a source of power supply for not explosion safe converters POCA-10 it is possible to use a power supply sources of direct current of the type 96/24-1/45 or БП 96/36-1/45, produced by SRC “ELEMER”. When using the power supply source of direct current of БП 96/24-4/45 type it is possible to connect two converters simultaneously.

2.4.10. Diagram of electric connections of explosion proof converters POCA-10Ex is provided at the figure 2.5.

Diagram of electric connections of explosion proof converters POCA-10Ex



Picture 2.5 legend:

TM 5122Ex – multichannel thermometer produced by SPC «ELEMER»;

Figure 2.5

2.5. Marking

2.5.1. Marking is made in accordance with State Standards 26828-86E, State Standards 22520-85 and drawings HKГЖ.414614.001СБ.

2.5.2. Marking of explosion proof converters

2.5.2.1. On the cover of the housing of explosion proof POCA-10Ex, POCA-10AEx there is a plate with marking of explosion protection «ExiaIICT6 X» and the range of temperatures of surrounding media is indicated:

- (-10 °C ≤ t_a ≤ +70 °C),
- (-40 °C ≤ t_a ≤ +70 °C) or
- (-25 °C ≤ t_a ≤ +70 °C) depending on the version.

2.5.2.2. Electrical parameters:

- maximum input current I_i: 120 mA,
- maximum input voltage U_i: 24 V,
- maximum input capacity C_i: 47 nF,
- maximum internal inductance L_i: 0,2 mG.

2.5.3. Method of marking – gluing (with the help of double sided gluing tape) plates, made on the tape by the method of serigraphy, providing safety of marking during the operation term.

2.6. Packaging

2.6.1. Packaging is performed in accordance with State Standards 23170-78E and the drawing HKГЖ.414614.001УЧ.

3. Use of devices according to their purpose

3.1. Preparation of the device for operation.

3.1.1. Safety instructions.

3.1.1.1. Safety of POCA-10 operation is provided by :

- insulation of electrical circuits in accordance with norms envisaged by the items 2.2.19, 2.2.20;
- reliable fixation during mounting at the object;
- construction (all components of converters, under voltage, are located in the housing, providing protection of service personnel from touching components and units, that are alive).

3.1.1.2. According to the method of protection of a person from electrical shocks by current of POCA-10 correspond to the category I in accordance with State Standards 12.2.007.0-75.

3.1.1.3. Grounding is performed with the help of the screw with washers, located in the housing of POCA-10.

3.1.1.4. During testing of POCA-10 it is necessary to follow general safety requirements according to State Standards ГOCT 12.3.019-80, and during operation - «Regulations of technical operation of electrical appliances of consumers» and «Regulations of accident prevention during operation of electrical appliances of consumers» for appliances with voltage below 1000 V, approved by Gosenergonadsor.

3.1.1.5. POCA-10 should be serviced by personnel, having a qualification group on accident prevention not less than II in accordance with «Safety regulations during operation of electrical appliances of consumers».

3.1.1.6. During testing of insulation and measuring its resistance it is necessary to consider safety requirements, designed for testing equipment.

3.1.1.7. Changing, connection and disconnection of converters from trunk lines, conducting measured media, should be done only when pressure is absent in the trunk lines and electrical supply is off.

3.1.1.8. Converters POCA-10A, POCA-10AEx (of increased reliability) in accordance with НП-001-97 (ОПБ – 88/97) belong to the safety groups 2, 3:

- according to their purpose – to the elements of normal operation;
- according to influence on safety - to elements important for safety;
- according to the character of performed functions – to controlling elements.

An example of classification designation 2HY or 3HY.

3.1.1.9. POCA-10A, POCA-10AEx are fire safe, that is the possibility of a fire in above mentioned converters does not exceed 10^{-6} per year in accordance with State Standards 12.1.004-91 as

in normal conditions and also in emergency conditions of operation of APP. Fire is an open flame on external surfaces of converters or outburst of burning particles from them.

3.1.1.10. During testing and operation of POCA-10A, POCA-10AEx it is necessary also to follow the requirements НП-001-97 (ОПБ-88/97), ПНАЭ Г-1-024-90 (ПБЯ РУ АС-89).

3.1.2. External inspection

3.1.2.1. During external inspection it should be found out whether there are any mechanical damages present, as well as correctness of marking and complete set.

In case of any defects, affecting operation ability of POCA-10, inconsistency of completeness, marking, their future operation is determined.

3.1.2.2. Every POCA-10 is checked for presence of the certificate with the stamp of quality control department.

3.1.3. Mounting of devices

3.1.3.1. POCA-10 is mounted on the site in the position comfortable for servicing.

3.1.3.2. When selecting the location site for POCA-10 it is necessary to take into consideration the following:

- location sites of POCA-10 should be provided with comfortable conditions for servicing and dismounting;
- temperature, measured humidity of ambient air, vibration parameters should not exceed the values provided in the section «Technical characteristics» of the present manual;
- magnetizing force, caused by outside sources of alternate current with frequency 50 Hz, should not exceed 300 A/m.

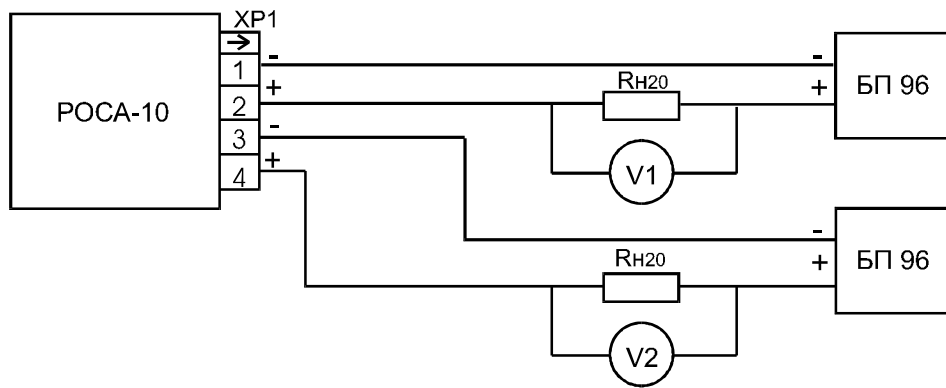
3.1.3.3. To ground the housing of POCA-10, for which purpose a lead-out with section of 1 mm² from the ground buss should be connected to the special clamp on the housing POCA-10.

3.1.3.4. Mounting of explosion proof converters POCA-10Ex, POCA-10AEx, POCA-10TEx, POCA-10TAEx should be performed in accordance with the diagram of electrical connections provided at the figure 2.5.

3.1.4. Testing

3.1.4.1. Before switching on of POCA-10 it is necessary to make sure that its settings and assembly correspond to instructions provided in item 3.1.3. of the present manual.

3.1.4.2. Connect POCA-10 to power source and to measuring instruments in accordance with the figures 3.1 or 3.2.

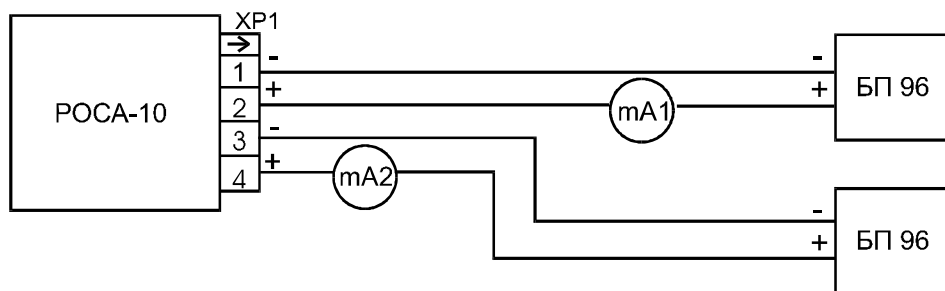


Picture 3.1 legend:

R1, R2 – standard resistance coils,

V₁, V₂ – voltmeters.

Figure 3.1



Picture 3.2 legend:

mA1, mA2 – milli-ammeters.

Figure 3.2

3.1.4.3. Warm up POCA-10 for not less than 10 minutes.

3.1.4.4. Operation ability of POCA-10 should be tested, by changing measured humidity and temperature from the lower limiting value up to the upper one. At this a variation of the output signal should be observed.

3.2. Operation of the instruments

3.2.1. The magnitude of the measured value is determined from the formula

$$A = \frac{(A_B - A_H)}{(I_B - I_H)} \cdot (I - I_H) + A_H, \quad (3.1)$$

where A, A_B, A_H, I, I_B, I_H – are decoded in item 2.2.3.

3.2.2. POCA-10 makes it possible for every output channel to select one of the following measured values:

- relative humidity in %;
- absolute humidity in gr/m^3 ;
- humidity content mln^{-1} ;
- dew point in $^{\circ}\text{C d.p.}$;
- temperature $^{\circ}\text{C}$.

3.2.2.1. Factory setting of the channels is indicated in the certificate of POCA-10.

3.2.3. Indication of the following values is possible in POCA-10:

- measured value in channel 1;
- measured value in channel 2;
- measured values in channels 1 and 2 alternately with 5 sec. period

3.2.3.1. Factory setting of the indicated value – value in channel 1.





3.2.4. In POCA-10 there is envisaged a hardware correction of the magnitude of measured value and output current signal by adjustment of «zero» and of the range of signal of primary converter. Correction is performed only for channel 1. Adjustments are performed with the help of the keys «», «» (figure 3.3) there is a panel under the cap of the housing.



Figure 3.3

After enabling the converter is set in measuring mode.

In order to switch to the mode of «zero» adjustment or the range adjustment it is necessary for 3 seconds to push the key  or  correspondingly.





Switchover from the adjustment mode to the measurement mode is performed automatically after 4 seconds after the last pressing of any of the keys. At this, storage of measurements performed takes place.

If it is necessary to quit the adjustment mode without storage of any changes it is necessary to press both keys simultaneously for 3 seconds.

3.2.4.1. Adjustment of «zero».

To set the magnitude of the measured value, equal to the lower limit of conversion.





To enter the mode of «zero» adjustment. In converters with the indication for 1 second the marking «SEtLo» will appear, after that a blinking symbol «Rh %» will appear and the number in the range from minus 5.00 to plus 5,00, demonstrating in percentage the deviation of the minimal signal of the primary converter. The factory setting of deviation is equal to 0.

Using the keys  and  it is necessary to set the value of the output signal equal to its lower limit. Single pressing of the key  () decreases (increases) deviation of signal of relative humidity for 0,01 %. Holding the keys in pressed state would result in continuous variation of «zero» deviation with an interval of 0,05 %.

3.2.4.2. Range adjustment

To set the magnitude of measured value, equal to the upper limit of conversion.

To enter the mode of the range adjustment. In converters of with indication for 1 sec. the sign «SEtHi» will appear, after that a blinking symbol «Rh %» will appear and the number in the range from minus 5.00 to plus 5.00 demonstrating in percentage the deviation of the range of primary signal from the initial one. Factory setting is equal to 0.

Using keys  and  one should set the value of output signal, equal to its upper limit. Single pressing of the key  () decreases (increases) the range of the signal of relative humidity for 0,01 %. Holding the keys in suppressed condition would result in constant changing of the range with an interval of 0,05 %.

3.2.4.3. Other functions of the keys and

- simultaneous short-time pressing of both keys in indication mode of the measured value in the channel 1 would switch on for 1 second the indication mode of measured value in channel 2;
- simultaneous short-time pressing of both keys in adjustment mode would record in POCA-10 factory values of deviation equal to 0.

4. Verification technique

4.1. Verification of POCA-10 is performed by bodies of State Metrological service or other organisations accredited by IIP 50.2.014-96 with the right of verification. Requirements to the organisation, procedure of verification and the form of presentation of verification results are determined by IIP 50.2.006-94 "GSI. Verification of measuring instruments. Organisation and procedure of verification".

4.2. The recalibration interval makes 2 years.

4.3. The present methods may be used for calibration of POCA-10.

4.4. Verification procedures.

During verification the following operations should be performed provided in the table 4.

Table 4

№ order	Verification procedure	Obligation of operation performance by	
		initial verification	periodic verification
1.	External inspection	+	+
2.	Testing	+	+
3.	Determination of the basic error	+	+

4.5. Verification means

During verification the main and auxiliary verification means should be used provided in the table 5.

Table 5

Name of the verification instrument and its designation	Main metrological and technical characteristics of verification instruments
1. Emitter of humid gas «Rodnik-4»	Range of reproduction of relative humidity 10-98%. Absolute error of reproduction of relative humidity ± 1 %
2. Emitter of humid gas ГВГ-01	Range of reproduction of relative humidity 0-98%. Absolute error of reproduction of relative humidity ± 1 %
3. Direct current power supply БП 96/24, БП 96/36 ТУ 4229-018-13282997-99	Output voltage: (24 \pm 0,48) В, (36 \pm 0,72) В. Load current not more than 45 mA
4. Measuring calibrator of unified signals standard ИКСУ-2000* ТУ 4381-031-13282997-00	Range of current measurements: 0...25 mA. Basic error $\pm(10^{-4} \cdot I + 1)$ mkA.
5. Resistor thermometer platinum vibration-proof standard ПТСВ-3 of the 3-d category ТУ 4211-041-13282997-02	Range minus 50...+500 °C. Basic error not more than 0,04 °C
6. Liquid thermostat T-2 ТУ 4381-153-56835627-04	Stability 0,01 °C. Gradient 0,01 °C
9. Megohmmeter Ф4102/1-1М ТУ 25-75340005-87	Measuring range 0...10000 MOhm, U=500 V
Notes : 1. The manufacturing company of verification instruments for items 3, 4, 5 is SPC «ELEMER». 2. All enumerated in the table 5 verification instruments should have effective verification certificates. 3. It is possible to use some recently developed or employed verification means and equipment, having superior characteristics than the ones mentioned above.	

4.6. Safety requirements

4.6.1. All operations during verification should be done observing all safety requirements, provided in item 3.1.1 of the present operation manual.

4.7. Conditions of verification and preparation for it.

4.7.1. During verification procedure the following conditions are observed:

- temperature of ambient air, °C 20 \pm 5;
- relative air humidity, % 30-80;
- atmosphere pressure, kPa (mm merc. Column) 84,0-106,7 (630-800);
- supply voltage, V 36 \pm 0,72; or 24 \pm 0,48.
- ripple of voltage supply should not exceed $\pm 0,5$ % of the value of supply voltage
- load resistance, Ohm
 - for POCA-10 with the unified output signal 4-20 and 20-4 mA
 - 500 \pm 50 (for 36 V)
 - or 250 \pm 25 (for 24 V);

- external electrical and magnetic fields should be absent or should be within the limits not influencing operation of POCA-10;
- vibration, jolting, shocks, affecting operation of POCA-10 in the process of verification should be absent;
- delay time for POCA-10 in manual-on position prior to beginning of verification is 30 minutes.

4.7.2. Operations, performed with verification instruments and with verified POCA-10 should correspond to instructions provided in operation documentation and the present operation manual.

4.8. Verification operation

4.8.1. External examination of verified POCA-10 is performed in accordance with clause 3.1.2 of the present operation manual.

4.8.2. Before verification, the following preparation work should be done:

- POCA-10 should be held at the temperature provided in the item 4.7.1, for over 3 hours;
- POCA-10 should be set in operation condition.

4.8.3. Testing

During testing of verified POCA-10 its efficiency is tested in accordance with the item 3.1.4 of the present operation manual.

4.8.3.1. Power supply and instruments of ИКСУ-2000 are switched on and held as well as POCA-10 in operational condition during 30 minutes, after that output signals of POCA-10 are measured by the instruments of ИКСУ-2000, that should be within the range from 4 to 20 mA or from 20 to 4 mA.

4.8.4. Determination of the resistance should be checked using megohmmeter F 4102/1-1M. Resistance of insulation of POCA-10 should not be less than 20 mOhm.

4.8.5. Determination of the basic absolute error of temperature measurement.

4.8.5.1. The basic absolute error of temperature measurement is determined in the points corresponding to 10, 25, 50, 75, 90 % of the range of temperature conversion of verified POCA-10, in the following sequence:

4.8.5.1.1. In the thermostat the temperature corresponding to the verified point is set.

4.8.5.1.2. Cylindrical probe of POCA-10 with a waterproofing protective cap is placed into a thermostat and hold it there at the preset temperature for 30 minutes, after that with the aid of the instrument ИКСУ-2000, connected with the outputs of POCA-10, current is measured I_T of the temperature channel 2T (see. picture 2.4) and simultaneously the temperature T_0 in the thermostat by the standard thermometer ПТСВ-3.

4.8.5.1.3. The temperature T is measured, corresponding to the measured value of current I_T of the temperature channel 2T from the formula

$$T = \frac{(I_T - I_H)}{(I_B - I_H)} \cdot (T_B - T_H) + T_H \quad (4.1)$$

where I_T – the value of the unified output signal of the channel 2T, mA;
 I_H, I_B – lower and upper limits of the unified output signal mA;
 T_H, T_B – lower and upper limits of temperature conversion.

4.8.5.1.4. The absolute error of temperature measurement is calculated from the formula δT

$$\delta T = T - T_0 \quad (4.2)$$

The value of the basic absolute error of temperature measurements in every verified point should not exceed the one provided in the table 1.

4.8.6. Determination of the basic absolute error of measurements of relative humidity.

4.8.6.1. The basic absolute error of measurements of relative humidity are determined in the points, corresponding to 10, 25, 50, 75, 90 % of the range humidity conversion verified by POCA-10 is determined in the following sequence:

4.8.6.1.1. Cylindrical probe of POCA-10 is set into the working chamber of humid gas generator.

4.8.6.1.2. In the working chamber of humid gas generator the temperature of (20 ± 2) °C is set.

4.8.6.1.3. In the working chamber of humid gas generator the relative humidity φ_0 is set, corresponding to verified point.

4.8.6.1.4. The primary converter is held in the above stated conditions for 1 hour, and measurements are performed of output currents of the humidity channel 1B and temperature channel 2T POCA-10, connected to instruments ИКСУ-2000.

4.8.6.1.5. According to items 4.8.5.1.3 the temperature T is determined, corresponding to the value of the current of the temperature channel 2T. The value of the temperature should correspond to (20 ± 2) °C.

4.8.6.1.6. The relative humidity is determined φ , corresponding to the value of current I of the humidity channel 1B, according to the formula

$$\varphi = \frac{(I - I_H)}{(I_B - I_H)} \cdot (\varphi_B - \varphi_H) + \varphi_H \quad (4.3)$$

where φ_H, φ_B – lower and upper limits of measurements of relative humidity provided in the table 1.

4.8.6.1.7. The absolute basic error of measurements relative to humidity is calculated according to the formula

$$\Delta\varphi = \varphi - \varphi_0 \quad (4.4)$$

The value of the basic absolute error of measurements of relative humidity in every verified point should not exceed the corresponding value provided in the table 1.

4.8.7. Determination of the basic reduced error of measurement of absolute humidity.

4.8.7.1. The basic reduced error of absolute humidity measurements is determined in the points corresponding to 10, 25, 50, 75, 90 % of the range of humidity conversion of verified POCA-10 is determined in the following sequence:

4.8.7.1.1. Cylindrical probe of POCA-10 is set into the working chamber of humid gas generator.

4.8.6.1.2. In the working chamber of humid gas generator the temperature of (20 ± 2) °C is set.

4.8.7.1.3. In the working chamber of humid gas generator the relative humidity φ_0 is set, corresponding to verified point.

4.8.6.1.4. The primary converter is held in the above stated conditions for 1 hour, and measurements are performed of output currents of the temperature channel 2T and humidity channel 1B POCA-10.

4.8.7.1.5. According to items 4.8.5.1.3 the temperature T is determined, corresponding to the value of the current of the temperature channel 2T. The value of the temperature should correspond to (20 ± 2) °C.

4.8.6.1.6. The absolute humidity is determined φ , corresponding to the value of current I of the humidity channel according to the formula

$$a = \frac{(I - I_H)}{(I_B - I_H)} \cdot (a_B - a_H) + a_H \quad (4.5)$$

where a_H, a_B – lower and upper limits of conversion of absolute humidity.

4.8.7.1.7. The values of absolute humidity are calculated a_0 , obtained in the working chamber of the humid gas generator, according to the formula

$$a_0 = 21,70 \cdot \frac{\varphi_0 \cdot E}{T + 273,15} \quad (4.6)$$

where E – pressure of saturated water vapours at the temperature T in kPa (table 6).

Table 6

Temperature, °C	Pressure of saturated water vapours E , kPa, for temperature, °C										
	0	1	2	3	4	5	6	7	8	9	10
20	2,3386	2,4876	2,6448	2,8106	2,9854	3,1697	3,3638	3,5682	3,7834	4,0097	4,2478
10	1,2274	1,3122	1,4020	1,4973	1,5981	1,7049	1,8180	1,9375	2,0639	2,1975	2,3386
0	0,6108	0,6567	0,7055	0,7576	0,8130	0,8720	0,9347	1,0014	1,0723	1,1475	1,2274
-0	0,6108	0,5623	0,5174	0,4757	0,4371	0,4014	0,3684	0,3379	0,3097	0,2836	0,2596
-10	0,2596	0,2374	0,2170	0,1982	0,1810	0,1651	0,1504	0,1370	0,1247	0,1134	0,1031
-20	0,1031	0,0936	0,0849	0,0770	0,0698	0,0632	0,0571	0,0517	0,0466	0,0421	0,0379
-30	0,0379	0,0342	0,0308	0,0277	0,0249	0,0223	0,0200	0,0179	0,0161	0,0144	0,0128

The value E in the passing points are determined by the methods of linear interpolation.

4.8.7.1.8. The basic reduced error of measurements of absolute humidity γ_a is calculated from the formula

$$\gamma_a = \frac{a - a_0}{a_B - a_H} \cdot 100 \% \quad (4.7)$$

The value of the basic reduced error of measurements of absolute humidity in every verified point should not exceeded the value calculated according to the formula in item of notes to table 1.

4.8.8. Determination of the basic reduced error of measurement of volumetric humidity content.

4.8.8.1. The basic reduced error of measurement of volumetric humidity content is determined in the points corresponding to 10, 25, 50, 75, 90 % of the range of humidity conversions of verified POCA-10, in the following sequence:

4.8.8.1.1. Погружаемую часть РОСА-10 помещают в рабочую камеру генератора влажного газа.

4.8.6.1.2. In the working chamber of humid gas generator the temperature of (20 ± 2) °C is set.

4.8.6.1.3. In the working chamber of humid gas generator the relative humidity φ_0 is set, corresponding to verified point.

4.8.8.1.4. The probe is held in the above stated conditions for 1 hour, and measurements are performed of output currents of the temperature channel 2T and humidity channel 1B POCA-10.

4.8.7.1.5. According to items 4.8.5.1.3 the temperature T is determined, corresponding to the value of the current of the temperature channel 2T. The value of the temperature should correspond to (20 ± 2) °C.

4.8.6.1.6. Humidity content x is determined corresponding to the value of current I of the humidity channel 1B according to the formula

$$x = \frac{(I - I_H)}{(I_B - I_H)} \cdot (x_B - x_H) + x_H \quad (4.8)$$

where x_H , x_B – lower and upper limit of humidity content conversion.

4.8.8.1.7. The value of humidity content x_0 is calculated, obtained in the working chamber of the generator of humid gas.

$$x_0 = \frac{\varphi_0 \cdot E}{P_0 - \varphi_0 \cdot E \cdot 0,01} \cdot 10^4 \quad (4.9)$$

4.8.8.1.8. The basic reduced error of humidity content measurements γ_x is calculated by the formula

$$\gamma_x = \frac{x - x_0}{x_B - x_H} \cdot 100 \% \quad (4.10)$$

The value of basic reduced error of humidity content measurements in every verified point should not exceed the corresponding values indicated in the table 1.

4.8.9. Determination of the basic absolute error of temperature measurement of dew point.

4.8.9.1. For dew points below plus 20 °C d.p. the generators of humid gas «Rodnik-2» or ГВГ-01 are used with converting of reproduced by them relative humidity into the temperature of dew point.

Basic absolute error of temperature measurement of dew point is determined in the points provided in the table 7, in the following sequence.

Table 7

$T - T_D, \text{ }^\circ\text{C}$	$\varphi_0, \%$	$\beta, \text{ }^\circ\text{C}/\%$
0-10	55	0,3
10-20	30	0,5
20-40	6	2
40-50	3	4
50-60	0 (2)	8

4.8.9.1.1. Probe POCA-10 is placed into the working chamber of humid gas generator.

4.8.9.1.2. In the working chamber of humid gas generator the temperature T_0 , equal to $(20 \pm 2) \text{ }^\circ\text{C}$ is set.

4.8.6.1.3. In the working chamber of humid gas generator the relative humidity φ_0 is set, corresponding to verified point (temperature of dew point T_{D0}). The value of relative humidity for the given point is calculated with the aid of table 6 – determine pressure of saturated vapors $E(T_{D0})$, $E(T_0)$ at temperatures T_{D0} and T_0 correspondingly.

$$\varphi_0 = \frac{E(T_{D0})}{E(T_0)} \cdot 100\% \quad (4.11)$$

4.8.9.1.4. The probe is held in the above stated conditions for 1 hour, and measurements are performed of output currents of temperature and dew point temperature POCA-10.

4.8.9.1.5. According to items 4.8.5.1.3 the temperature T is determined, corresponding to the value of the current of the temperature channel 2T. The value of the temperature should correspond to (20 ± 2) °C.

4.8.9.1.6. The temperature of the dew point T_D is determined corresponding to the current value I of humidity channel 1B according to the formula

$$T_D = \frac{(I - I_H)}{(I_B - I_H)} \cdot (T_{DB} - T_{DH}) + T_{DH} \quad (4.12)$$

where T_{DH} , T_{DB} – lower and upper limits of temperature conversion of dew point.

4.8.9.1.7. The basic absolute error of temperature measurement of dew point is calculated.

$$\delta T_D = T_D - T_{D0} \quad (4.13)$$

The value of the basic absolute error of the dew point temperature measurements in every verified point should not exceed the corresponding values indicated in the table 1.

4.8.9.2. For dew point from minus 40 °C d.p. to plus 80 °C t.p. the generators of humid gas «Rodnik-2» or ГБГ-01 are used in the mode of relative humidity reproduction. with converting of reproduced by them relative humidity into the temperature of. Basic absolute error of temperature measurement of dew point is determined on the basis of results of determination of the absolute error of measurements of relative humidity in the points provided in the table 7, in the following sequence.

4.8.9.2.1. Probe POCA-10 is placed into the working chamber of humid gas generator.

4.8.9.2.2. POCA-10 is connected to a computer with the aid of an interface RS 232.

4.8.9.2.3. In the working chamber of the humid gas generator the temperature T_0 , is set equal to (20 ± 2) °C.

4.8.9.2.4. In the working chamber of the humid gas generator the relative humidity φ_0 , is set corresponding to verified point.

4.8.9.2.5. The program «Rosa-tuning» is started in the interrogation mode.

4.8.9.2.6. In accordance with items 4.8.6. an absolute error of measurements of relative humidity $\delta\varphi = \varphi - \varphi_0$ is determined, where φ - value of relative humidity, measured with the aid of the soft program «Rosa-tuning» .

4.8.9.2.7. The basic absolute error of temperature measurements of dew point according to the formula

$$\Delta T_D = \beta \cdot \Delta \varphi + \Delta T \quad (4.14)$$

where ΔT - basic absolute error of temperature measurements at the point T ,
 β – coefficient from table 7.

The value of the basic absolute error of temperature measurements of dew points in every verified point should not exceed the corresponding value, provided in the table 1.

4.8.10. Registration of the verification results.

4.8.10.1. Positive results of the initial verification of POCA-10 a special recording in the registration certificate is made, certified by the verification officer and an imprint of a stamp and (or) by the verification certificate on verification according to the form of attachment 1 to IIP 50.2.006-94.

4.8.10.2. In case of negative results of verification POCA-10 is not admitted for operation. Special report on unusability is performed according to the form of attachment 2 to IIP 50.2.006-94.

5. TECHNICAL MAINTENANCE

5.1. Servicing of POCA-10 comes to observing operation, storage and transportation regulations, given in the present manual on maintenance inspections, periodic verification and repairs.

5.2. Maintenance inspections are carried out according to the rules, established by the organization, using POCA-10, but not less than twice a year, and they include:

- external examination;
- checking of safety of attachment of POCA-10, absence of grounding wire rupture;
- performance check in accordance with the sect. 3.1.4;
- checking of electrical resistance of insulation according to item 4.8.4 of the present manual.

5.3. Periodic verification of POCA-10 is carried out once in a two-year period, according to the instructions, given in the item 4 of the present operation manual.

5.4. POCA-10 with defects, which cannot be eliminated during the maintenance inspection, or the ones, which have not passed a periodic verification, are liable to a current repair.

Repair of POCA-10 is carried out by a manufacturer subject to a separate contract.

5.5. Provision of explosion protection during mounting and operation.

Explosion proof converters POCA-10Ex may be used in highly explosive premises and outside installations in accordance with explosion proof marking with consideration of requirements of the effective «Rules of electric power plants operation» (ПВЭ item 7.3), «Rules of technical operation of electric power plants for consumers» (ИТЭЭП, item 3.4), of the present operation manual, instruction of mounting of electrical equipment, as a component of which POCA-10Ex is installed.

Prior to mounting POCA-10Ex should be inspected. At that time it is necessary to pay attention:

- warning inscriptions, explosion protection marking and its correspondence to the class of highly explosive zone;
- absence of damages of the housing of converter and components of cable input;
- condition and reliability of screwing up of electric contact connections, presence of fastening elements (nuts, screws, washers etc.);
- condition of grounding components.

Mounting of explosion proof converters POCA-10Ex should be done in accordance with the diagram of electric connections, provided at the figure 2.5. It is necessary to secure reliable connection of the wires of the cable to current providing connectors contacts, excluding a possibility of short-circuiting of cable wires.

After mounting it is necessary to check operation ability of converters by measuring of current of intrinsically safe outer circuit. The current value should change within the range from 4-20 mA.

All mounting components should be fastened, removable parts should cling to the housing very tightly, as it is possible.

The housing of humidity converters should be grounded. The place of connection of outside grounding conductor should be cleaned very well and after connecting of the grounding conductor, safeguarded from corrosion by application of consistent greasing.

5.6. Provision of explosion protection during operation.

Accepting of explosion proof converters POCA-10Ex for operation after its mounting, organisation of operation and repair should be done strictly in accordance with the item 3.4 «Electrical installations in explosion safe zones» ПТЭЭП, as well as operating instructions for electrical equipment, in which pressure converters are installed.

Operation of POCA-10Ex should be done in such a way that should be observed all requirements provided in sections «Provision of explosion protection» and «Provision of explosion protection during mounting and operation».

During operation it is necessary to observe normal operation of POCA-10Ex, to make systematic external inspection as well as maintenance inspections.

During external inspections it is necessary to check:

- absence of ruptures or damages of insulation of the outside connecting cable;
- absence of apparent mechanical damages on the housing of POCA-10Ex.

During maintenance inspections it is necessary to perform all operations of outside inspection as well as the condition of contact joints inside the housing of POCA-10Ex, sealing of cable in the cable input. Periodicity of maintenance inspections is set depending on conditions of operation of POCA-10Ex.

Operation of POCA-10Ex with damages and faults is prohibited.

6. STORAGE

6.1. Storage conditions for POCA-10 packed in shipping container at the manufacturer's storage facilities should meet requirements of I State Standards 15150-69.

The air should not contain active agents.

6.2. Stowage of POCA-10 in storage facilities should ensure easy access to them.

6.3. POCA-10 should be stored on the racks.

6.4. The space between the walls, the floor of the storage facility and POCA-10 should not be less than 100mm.

7. TRANSPORTATION

7.1. POCA-10 are transportable by all kinds of transport in covered transport facilities. Strapping of package in a transport facility should be carried out according to the current regulations of the corresponding transport facilities.

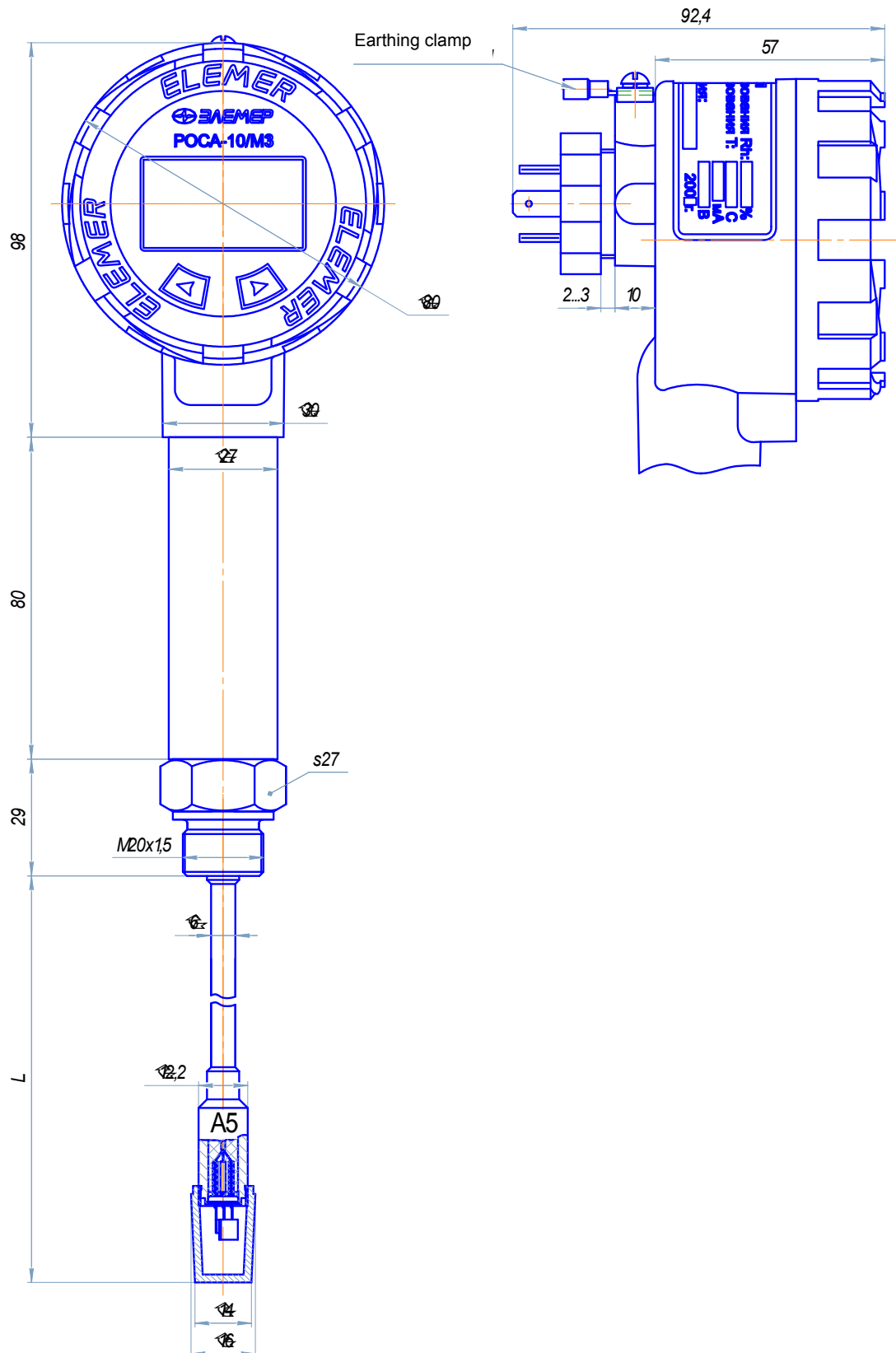
7.2. POCA-10 transportation conditions should meet requirements 5 according to State Standards 15150-69 at the ambient temperature from minus 50 to plus 60 °C, and should comply with anti-shock and anti-vibration measures.

7.3. POCA-10 should be transported parceled or separately.

If transported in boxes, requirements of State Standards 21929-76 should be observed for POCA-10.

Appendix A

Overall, connection and mounting dimensions of measuring converters of temperature and humidity POCA-10/M3



L – length of the working part (100, 160, 200, 250, 320, 400, 500, 630, 800, 1000) mm.

Figure A.1

Continuation of the appendix A

Overall, connection and mounting dimensions of measuring converters
of temperature and humidity POCA-10/M4

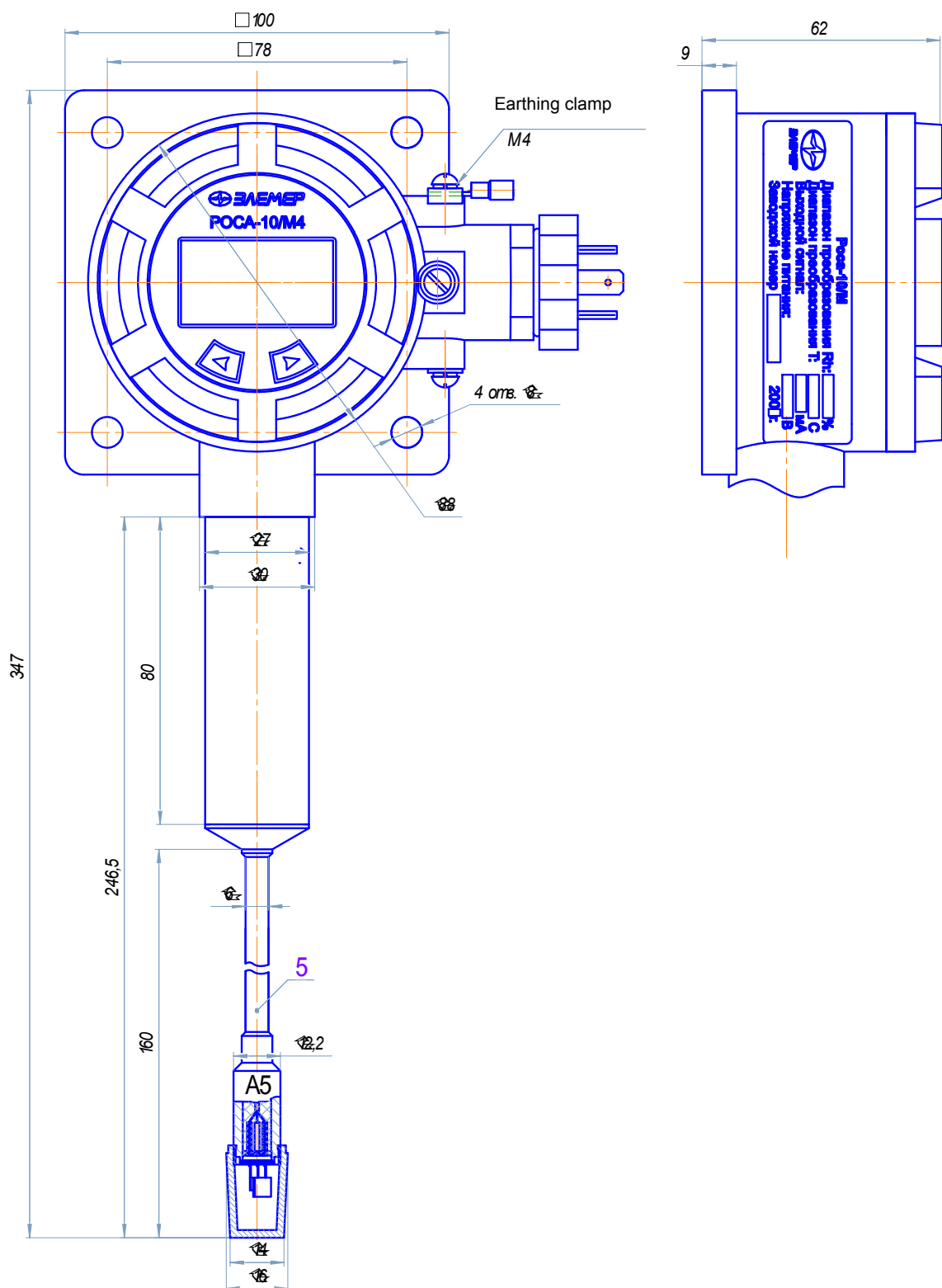


Figure A.2

Appendix B

An example of designation recording when ordering

POCA-10 X X X X X X X X X X X X
1 2 3 4 5 6 7 8 9 10 11 12 13

1. Type of the instrument
2. Type version (according to item 2.1.3)
Basic version – general industrial
3. Modification code (according to item 2.1.3)
4. Range of converted temperature (table 1)
Factory preset –0...100 °C
5. Range of converted humidity (table 1)
Factory preset – relative humidity 0...100 %
6. Index order: A, B (table 1)
Basic version – B
7. Code of climatic version: t4070, t1070, t2570, t2580 (according to item 2.1.11)
Basic version – t1070
8. The length of the operating part L, mm: (for POCA-10/M3): 100, 160, 200, 250, 320, 400,
500, 630, 800, 1000
9. Indicated value (involving indication) – humidity – code H, temperature – code T, humidity and temperature alternately – code HT.
Factory preset – code HT
- 10.
11. Additional stand testing during 360 hours (order index: 360II)
12. State verification (order index: ПII)
13. Designation of technical conditions

Attention! 1. Obligatory for filling are:

- Position 1 - type of the instrument
- Position 3 - modification code
- Position 8 - the length of the operating part (for POCA-10/M3)
All blank positions will be base.

Example of the minimum filling of the order form:

POCA-10/M3-160

Continuation of the appendix B

Order example

Basic version

POCA-10 – /-/- – /M3 – 0...100 °C – 0...100 % – B – t1070 – 160 – /-/- – /-/- – /-/- – /-/- –
1 2 3 4 5 6 7 8 9 10 11 12
– ТУ 4215-055-13282997-04
13

Version with consideration of all positions of the order form (special version)

POCA-10 – Ex – /M3 – 0...100 °C – 0...100 % – B – t1070 – 160 – HT – МИГР-04 – 360П –
1 2 3 4 5 6 7 8 9 10 11
– П – ТУ 4215-055-13282997-04
12 13

