

PIEZUS

PRESSURE GAUGE

OCTO

(2410, 3410, 3420, 3420 s, 3421)

Operation Manual

www.piezus.ru



This manual covers OCTO 2410/3410/3420/3420 s/3421 digital pressure gauge (hereinafter referred to as "device"); it contains technical specifications and other information necessary for proper operation and maintenance.

See datasheets at <http://piezus.ru> for complete specifications.

Production regulated by TOR 4212-000-7722857693–2015.

Terms and abbreviations used in the manual:

Span – measurement range; URL – upper range limit (a.k.a URV); LRL – lower range limit (a.k.a LRV).

1 Purpose of the device

1.1 This device measures and visualizes gauge or absolute pressure and monitors peaking fluctuations for the past period.

1.2 Applications: autonomous control over technological processes and laboratory measurements.

2 Technical specifications

2.1 General technical data

2.1.1 The device operates autonomously; its basic functions are:

- to display current values of the parameter measured by pressure transmitter in digital form (units of measurement selected by user) and graphical form, as bar graph, % of span;
- to store peak values registered throughout its autonomous operation and to show them on request;
- to accept operating mode adjustments made with control buttons (on the front panel).

2.1.2 Measured values are shown on the backlit display; see Table 1 for its parameters.

Table 1 - Display parameters

Name	Value
Range of displayed values	-19999...+19999
Primary / secondary line height	15/7 mm
Startup time (after switching-on)	0.2 s

2.1.3 See device's datasheet and label for span and accuracy info.

2.1.4 The device consumes power from two AA batteries, 3 V (2x1.5 V).

2.1.5 Battery life from 3 months to 1 year.

2.1.6 The device's housing is polycarbonate plastic and its pressure port is stainless steel (see Supplement A). Dimensions, max - 130 × 80 × 45 mm.

2.1.7 Weight, max - 0.3 kg.

2.1.8 Housing ingress protection (GOST 14254) - IP65.

2.2. Operating conditions:

2.2.1 The device was designed to operate in the following conditions:

- no aggressive vapors, gases and liquids in the environment;
- atmospheric pressure from 84 to 106.7 kPa (group R1 under GOST R 52931);
- ambient temperature from 0 to +50 °C;
- permissible media temperatures (depends on the seal type):
 - OCTO 3410 - from -25 to + 135 °C;
 - OCTO 3420 - from -40 to +125 °C;
- sensor exposure (liquids, gases and vapors):
 - OCTO 3410 - aggressive media;
 - OCTO 3420 - media non-aggressive to stainless steel.

2.2.2 Resistance to mechanical attack puts the device in group N2 under GOST R 52931.

2.3 Electromagnetic interference resistance and emission

2.3.1 Electromagnetic emission: the device is a Class A equipment under GOST R 51318.22 (CISPR 22:2006).

2.3.2 Electromagnetic interference resistance: the device is a class 3 equipment under GOST R 51317.4.3 (IEC 61000-4-3).

2.4 Operating limitations:

- medium should be free from crystallizable impurities, contaminations and dust;
- connect the device where the medium is still or almost still and produces no vortices;
- install DZ 10 or the like pressure snubber before the device if the system can produce hydraulic shocks;
- use impulse tubing (pre-filled with water) when measuring vapour pressure.

3 Safety precautions

3.1 The electric shock hazard class of the device is III (no dangerous voltage); see GOST 12.2.007.0 for full classification.

3.2 Only qualified specialists that have read and understood this manual are allowed to mount, connect, adjust, calibrate, do maintenance on the device.

4 Mounting and use

4.1 Position the device with ease of reading its display in mind (the display rotates along the pressure port's axis).

4.2 If the medium is gaseous, position the device so that the pressure take-off tubes slope up uniformly (1:10 min) to the device and slope down if the medium is liquid. In case such installation positions are impossible, mount settling vessels at lower portions of pressure take-off tubes for gaseous media and gas holders at their higher portions for liquid media.

4.3 Screw the device into a prepared hole (must be of the required size) to expose the diaphragm to the medium. Make sure the seal is resistant to the medium.



DO NOT USE any thread seals (fiber, Teflon tape) other than supplied.

DO NOT CONNECT the device to enclosed volumes filled with liquid.

Never hold onto the device's body when screwing it in! Use an S27 wrench on the hexagon found on the housing.

4.4 Observe these rules when using the device:



DO NOT:

- 1 **use any objects to touch or otherwise apply mechanical force to the diaphragm;**
- 2 **use transmitters bearing visible signs of mechanical damage;**
- 3 **use transmitters in inappropriate climatic conditions;**
- 4 **allow medium temperatures above or below the limits specified for the transmitter.**

5 Setup

5.1 There is a display and four buttons on the front panel of the device. See Figure 1 for their description.

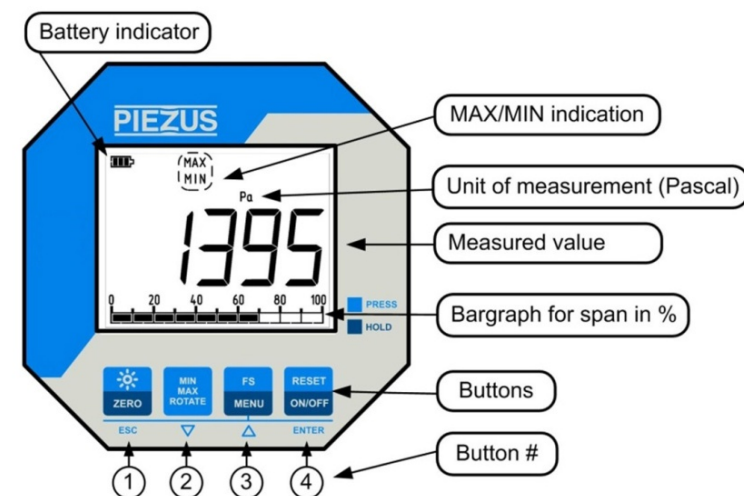


Figure 1 - Elements on the front panel of the device

When the device is switched on, it self-tests and then brings the measured value to the display if all is well.

5.2 To switch the device on, put batteries in (see back of the housing) and press and hold button 4 for over 2 seconds. The same button switches the device off.

5.3 You can change the operating parameters of the device with the help of buttons as described by Table 2.

5.4 Press button 3 and hold it for over 2 seconds to enter the operating parameters setup menu. There appears the word SET on the display and name of the parameter in the top right corner, under which you can see its code or value (Figure 2).

Table 2 - Control Buttons

Button	Action
1	BACKLIGHT and ZERO: - press to turn backlight on / off. You can change backlight duration in the MODE menu (factory setting - 1 min); - press and hold to calibrate zero. Functions as ESC in the MENU mode: press to cancel the last change made.
2	MIN or MAX (outputs peak values registered after last battery replacement or reset): - press once to bring minimal pressure value registered to the primary line (MIN lights up); - press twice to bring maximal pressure value registered to the primary line (MAX lights up); - press three times to have minimal and maximal values replace each other every 3 seconds. In the MENU mode, pressing the button cycles through menu parameters and numeric values.
3	FS or MENU - access to the operation parameters setup menu: - press to bring URL (URV) to the primary line (FS lights up, bargraph fills to 100%); - press and hold to enter setup menu mode. In the MENU mode, pressing the button cycles through menu parameters and numeric values.
4	RESET or ON/OFF: - press to clear MIN and MAX values registered by the device after last battery replacement or reset; - press and hold to switch the device on or off. Functions as ENTER in the MENU mode: press to confirm the parameter choice or the change made.

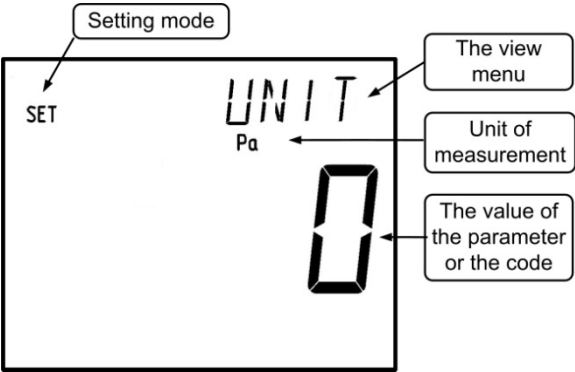


Figure 2 - Display elements, operation parameters setup mode, selection of units of measurement

See Supplement B for the list of all parameters.

Press button 3 (^) or 2 (v) to cycle through the parameters.

Press 4 to change the parameter: the numeric value you can edit starts flashing, press button 3 or 2 to change it, press and hold any of those buttons to have the value increase or decrease with the gradually increasing speed.

Confirm the change by pressing button 4 (ENTER).

The device switches back to operation mode automatically after 60 seconds of inactivity.

6 Maintenance

Routine maintenance frequency - at least once every 3 months; it includes the following:
1) external inspection and removal of dust and dirt (do not use chemical solvents and forced rinsing for that purpose);
2) system airtightness and mounting reliability checkup;
3) batteries checkup and replacement, if necessary (switch the device off before replacing the batteries);
4) functions testing;
5) ZERO signal (matches zero inlet pressure) checkup, calibration if necessary.

Routine checkups of the device in use follow data specified in its passport.

See the device's passport for its calibration interval and manufacturer's warranty.

Manufacturer refuses all claims, reclamations, complaints related to devices with damaged manufacturer seals and showing signs of damage resulting from inappropriate operation, transportation or storage.

All and any repairs are done by the manufacturer exclusively.

7 Marking

The device bears a label (sticker on the back of the housing) that contains the following information:

- 1) name of the manufacturer;
- 2) code of the device;
- 3) manufacturer's trademark;
- 4) serial number and production date;
- 5) bar code (QR code);
- 6) electrical protection class (GOST 12.2.007.0);
- 7) ingress protection rate (GOST 14254);
- 8) measured pressure range.

8 Package contents

See Table 3 for delivery package contents.

Table 3 - Package contents

Name	Quantity
Digital pressure gauge (batteries not included)	1 pc
Passport	1 copy
User manual (this paper)	1 copy
Calibration leaflet	1 copy*

* Supplied by special order.

9 Transportation and storage

9.1 Use roofed transport to deliver the device to any destination needed; place individual packages into shipping containers if required.

9.2 Permissible ambient temperature for transportation ranges from -20 to +50 °C; protect the devices from impacts and vibrations.

9.3 Store devices in shipping containers in a heated (+5 to 40 °C) ventilated space.

10 Resource and service life

10.1 Operating mode: continuous.

10.2 Mean time between failures, min – 120,000 h.

10.3 Service life - 12 years (normal working conditions: non-aggressive medium, temperature at +23 ± 3 °C, no vibrations and shaking).

11 Disposal

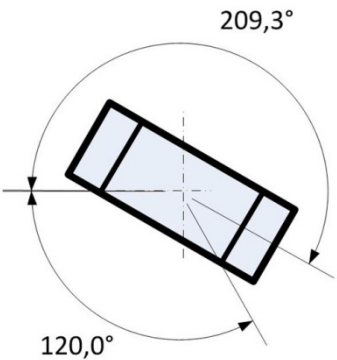
The device contains no precious metals. Dispose of as prescribed by regulations adopted by the operator.

Supplement A

Pressure gauge housing



Housing rotation angle (top view)



Supplement B

Editable parameters

Menu	Function
<i>LRL</i>	Displays LRL (lower range limit) . Press ENTER button to enter UNIT submenu.
<i>URL</i>	Displays URL (upper range limit) . Press ENTER button to enter UNIT submenu.
<i>UNIT</i>	Press button 2 (v) to shift decimal point, button 3 (^) to change unit of measurement (available: Pa, kPa, bar, mbar, psi, mWc (at 20 °C), kgf/cm2,%).
<i>Z T</i>	Zero calibration. Supply pressure matching LRL (reference value) before calibrating zero. Calibrate by pressing 4 (ENTER)*.
<i>FS T</i>	URL adjustment. Press 4 (ENTER) when gauge is receiving pressure matching URL*.
<i>OFF t</i>	Select automatic shutdown delay, options: 30, 60 (factory setting), 90, 120, INF (no shutdown).
<i>LH t</i>	Select automatic backlight switchoff delay, options: 10, 20 (factory setting), 30, 60.
<i>dEF</i>	Press and hold 4 (ENTER) to reset to factory set operation parameters.
<i>PS d</i>	Set PIN code to restrict access to the device's menu (factory setting – 0000). Shift insertion point with button 2 (v), change values with button 3 (^), save changes with button 4 (ENTER)*.

* Set is a confirmation request. Press and hold ENTER to confirm the change made.



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