PG ERIS - 414

Portable gas detector

Gas detectors are designed for measurements of
low explosive limit of combustible gases,
toxic gases and oxygen in the atmosphere.
From 1 to 4 gases can be measured at the same time

User manual

Content

INTRODUCTION

The present operation manual is the guideline document for handling of the portable gas detector PG ERIS-414 (hereinafter referred to as the gas detector, device). The certificate of the approved type is always supplied along with the device. The device serial number, detected gases, alarm thresholds, operation conditions, scope of supply, verification mark and other device characteristics are indicated in the certificate.

The gas detector is admitted for use in the Russian Federation and has the pattern approval certificate issued by Federal Agency on Technical Regulating and Metrology RU.C.31.373.A No. 63539 and is listed in State Register of Measuring Instruments of the Russian Federation under No. 65108-16.

The gas detector meets requirements of Customs Union Technical Regulation TR TS 012/2011 "The safety of equipment for explosive environments", conformity certificate No. TS RU S-RU.MY62.V.04130. Validity period: till 07.07.2021 inclusively.

The gas detector meets requirements of Customs Union Technical Regulation TR TS 020/2011 "Electromagnetic compatibility of technical equipment", registration number of conformity declaration TS No. RU D-RU.MA10.V.00243. Validity period: till 07.12.2018 inclusively.

Explanation of the warning signs of the present manual:

ATTENTION

Reference to the potential hazardous situation that in case of non-observance of the corresponding preventive measures could lead to personnel injury, device damage or environment incidents.
Warning on device mishandling.

INFORMATION

Additional information on device handling.

ATTENTION TEMPERATURE CONDITIONS

Special attention shall be paid to the temperature during the work performance.

DANGER

Reference to the immediately dangerous situation that in case of non-observance of the corresponding preventive measures could lead to serious consequences.

1 SAFETY PRECAUTIONS

- The gas detector is personal safety device. You are responsible for further actions in case of warning signal.
- Avoid mechanical shock of the gas detector.
- Avoid mechanical influence on sensors. Do not press on sensors or pierce them by any objects. Avoid influence of pressurized airflow on the gas detector sensor during cleaning process of the housing.
- Do not operate the gas detector with broken components, housing or other defects.
- Do not replace the device components without special authorisation.
- Do not charge the gas detector, replace sensors and open the device in explosion hazard areas.
- Violation of operation rules specified by the manufacturer could lead to decrease of protection level provided by the housing and to degradation of explosion proof used in this equipment.
- Calibration shall be carried out only in safe place in the absence of dangerous gases.

- To prevent battery damage due to deep discharge during long intervals between gas detector operations or in case of long storage the battery shall be charged at least once per 6 months.
- Calibration shall be carried out according to the schedule depending on influence of toxic and contaminating substances on the sensor. It is recommended to perform calibration at least once per 6 months.
- PG ERIS-414 shall be fully charged before first operation.
- For safety reasons the gas detector PG ERIS-414 shall be operated and maintained only by the qualified personnel. Carefully study the operation manual before operation and maintenance of the device.
- Use BUMP TEST to check capability of sensors to detect gases.

2 APPLICATION AND FUNCTIONS

2.1 PG ERIS-414 application

The portable gas detector PG ERIS-414 is designed for measurement of concentration of toxic flammable, hydrocarbon gases and oxygen in air of working area, industrial premises and open spaces of production facilities.

Operating principle of the gas detector is based on physical-chemical methods of analysis:

- electrochemical - measurement of volume concentration of toxic gases and oxygen content;
- optical or thermocatalytic - measurement of flammable and hydrocarbon gases content.

The gas detector simultaneously makes analysis from one to four components of the gas mixture, perform continuous monitoring and indication of the measured values and gas detector status on OLED display.

2.2 Gas detector functions:

➢ digital indication of all detected gases content in real time on OLED display of the gas detector;

- visual, audible and vibration alarm if detected gas content reaches limits of alarm response ALARM 1 and ALARM 2 of each measured gas;
- digital indication of the set alarm limits under the selected measuring channel;
- calculation of STEL values (maximum permissible concentration)* and TWA (average changeable value of maximum permissible concentration)*;

*optionally;

- event archive record and storage in non-volatile memory;
- PC data exchange via USB interface;
- current time indication;
- indication of device operation faults / errors;
- Energy safety mode - switching over to power standby mode during normal operation.

Functions of the gas detector available during device setting-up by software installed on PC are specified in clause 17.

3 SCOPE OF SUPPLY

3.1 Scope of supply of the gas detector shall correspond to information indicated in the table

Designation	Quantity	Notes
Portable gas detector PG ERIS-414	1	-
Certificate	1	-
Verification procedure MP 83-221-2016	1	For lot
Software	1	Available on the website www.eriskip.com
Calibration cap	1	-
Dock station	1	-
USB cable	1	-
Power adapter (Charger)	1	-
Operation manual	1	-
Sensor plug*	0-3	*Upon request
Conformity certificate TR TS	1	For lot
Conformity certificate PB	1	*Upon request
Packing	1	

4 STORAGE

4.1 Original package

The gas detector with scope of supply and operational documentation is delivered to the customer originally packed in carton box. Packing method, preparation for packaging, transport package and materials used during packaging, positioning order correspond to the manufacturer drawing.

4.2 Storage

Storage of the gas detector corresponds to conditions of the second group according to GOST 15150-69:

- air temperature – from minus 30 up to plus 50 °C;
- relative air humidity (not more than) - 95 % at 25 °C.

The gas detectors shall be placed on racks during storage. Storage environment of the gas detector shall not contain harmful impurities causing corrosion.

During long intervals between gas detector operations or in case of long storage the battery shall be charged at least once per 6 months. Refer to clause 14 of the present manual for rules of battery charging procedure.

5 FIRST OPERATION (SWITCHING ON) OF THE GAS DETECTOR

Follow the below steps before first operation of the gas detector:

- Check scope of supply.
- Carefully study the operation manual and certificate of the gas detector.
- Perform visual check of the gas detector:

- compare the serial number indicated on the rear part of the device housing and in accompanying documents;
- check housing integrity;
- check availability of all fasteners and quality of their joints.

- Switch on the device and wait till the end of warming up, refer to clause 9.1.

In case the gas detector was stored at negative temperature, it should be kept switched off at temperature from 0 to plus 30°C within 2-4 hours.

If battery of the device discharged after long storage period it shall be fully charged, refer to clause 14.

- If sensor zero self-calibration function is turned on, perform the procedure in definitely clean atmosphere.

- Check operability. In this regard use BUMP TEST as per clause 13. Then start operation of the device.

6 OPERATION AND MAINTENANCE

6.1 While operating the gas detector PG ERIS-414 shall be maintained.

6.2 Recommended maintenance types and schedule:

- visual inspection - before every use,
- surface cleaning - once per month,
- operability check (BUMP TEST), refer to clause 13,
- gas detector inspection, refer to clause 16.

6.3 During visual inspection check the following:

– integrity of the housing;

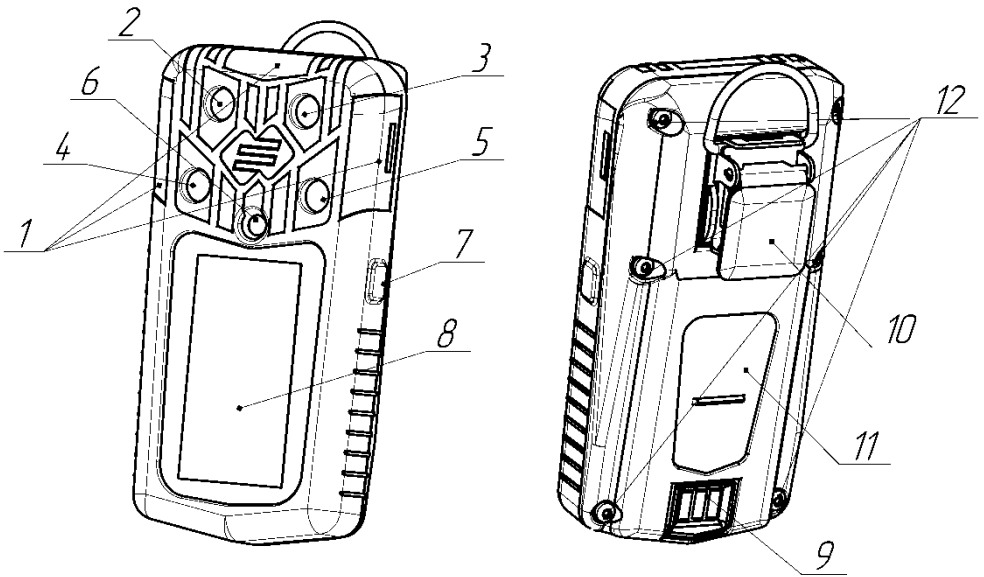
- availability of all fasteners and their components, quality of fasteners;

6.4 While operating the gas detector shall be cleaned in case of contamination. The gas detector shall be cleaned by wet cotton cloth or paper tissue continuously changing cloth / tissue contacting the surface to avoid scratches. If required water or compressed air with pressure up to 0.15 MPa could be used with the following wiping by cloth / tissue.

Do not direct air / water flow to the device sensor.

7 GAS DETECTOR DESCRIPTION

7.1 The external view of the gas detector and its characteristic features:



7.2 Gas detector components and external view

Position	Description
1	Visual alarm indicators (light conductors)
2	Flammable gas sensors * (CT/IR)
3	Oxygen sensor (O2)
4	Toxic gases sensor* (EC1)
5	Toxic gases sensor* (EC2)
6	Audible alarm
7	Control button
8	OLED-display
9	Gas detector charger connector
10	Clip for clamping to clothing
11	Sticker with gas detector marking
12	Housing mounting screws

Notes:

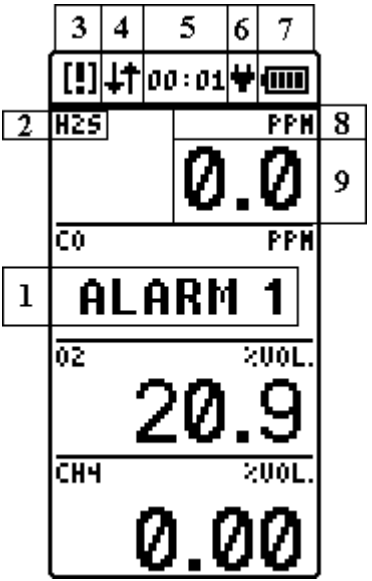
1) *the full list of possible gases is specified in Annex A.

2) Quantity of sensors is specified by the order.

3) CT-thermocatalytic sensor, IR-optical sensor, EC-electrochemical sensor.

7.3 Display

Gas detector is equipped with high-contrast OLED-display with wide view angle. The following information is displayed in real time mode:



1 - exceeding of alarm threshold,

2 - molecular formula of measured gases,

3 - symbol of device operation error, (refer to DEVICE STATUS),

4 - PC data exchange symbol,

5 - current time,

6 - symbol of external power supply connection,

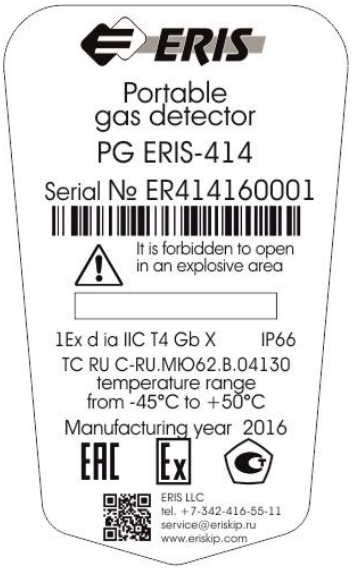
7 - battery charge level,

8 - measuring units,

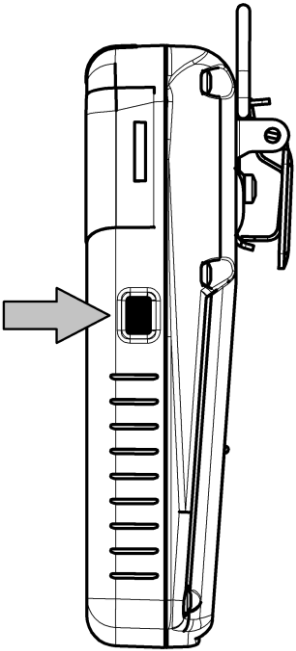
9 - gas concentration.

8 MARKING

Marking of the gas detector is applied to the rare part of the housing and includes the following information:



- manufacturer name and trade mark;
- gas detector model;
- gas detector serial number;
- gas detector bar code;
- explosion proof marking;
- IP marking according to GOST14254-96;
- operation temperature;
- number of conformity certificate TR TS;
- production year;
- approval mark of measuring instrument type according to PR 50.2.009-94;
- unified mark of product circulation on the market of the Member States of the Customs Union;
- specific explosion safety mark in accordance with TR TS 012/2011;
- manufacturer details.



9 MENU

9.1 Button control

☑ To switch on the gas detector press and hold the button within 4 seconds. Testing and warming up is performed automatically within 60 seconds.

☑ To switch off the gas detector press and hold the button within 5 seconds till the end of countdown and display switching off.

Note: The switching off of the device is carried out from the main screen.

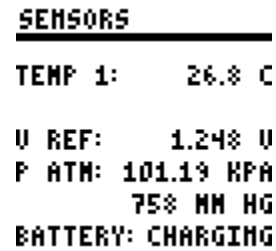
☑ Shortly press the button to enter the menu and move through menu bars.

☑ Hold the button within 2 seconds to enter the submenu.

☑ To exit the submenu select sign <<< at the end of the list and press the button.

9.2 Main menu

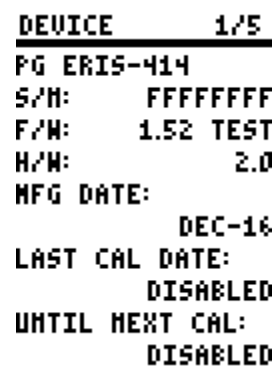
Menu item	Function
BUMP TEST	Quick testing of the device, refer to clause 13.
- ZERO CAL.	Zero calibration of the sensor, refer to clause 15.
- SPAN CAL.	Span calibration of the sensor, refer to clause 15.
DEVICE STATUS	Information on device status and errors occurred during operation. Possible errors are listed in Annex B.
SENSORS	Information on device temperature, atmospheric pressure and etc.
DEVICE	Information about device: Serial number, firmware version, manufacturing date, last calibration date. Information about sensors: Sensor designation, serial number, molecular formula of the measured gas, measurement range, calibration concentration, value of ALARM1, ALARM 2.
<<<	Return to the measurement mode / previous page.



9.3 Submenu SENSORS

The device displays the following information in real time mode:

- Temperature inside the device housing TEMP 1;
- Voltage reference "U REF ";
- Atmospheric pressure "P ATM." in kPa and mm Hg;
- Battery voltage "BATT." or mode CHARGING.



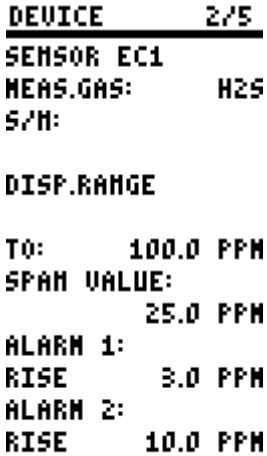
9.4 Submenu DEVICE

The following information is indicated at first page of submenu DEVICE:

Device name PG ERIS-414;

- Device serial number "S/N";
- Firmware version "F/W";
- Hardware version "H/W";
- Manufacturing date MFG DATE;
- Last calibration date LAST CAl DATE DISABLED;
- Amount of days until next calibration

- days until next cal. DISABLED



The following pages contain information on each sensor, namely:

- Sensor name SENSOR EC1;
- Molecular formula of the measured gas meas.gas;
- Sensor serial number "S/N";
- Indication range DISP.RANGE TO;
- Span calibration value SPAN VALUE.

This value shall be used during the device calibration;

- ALARM 1;

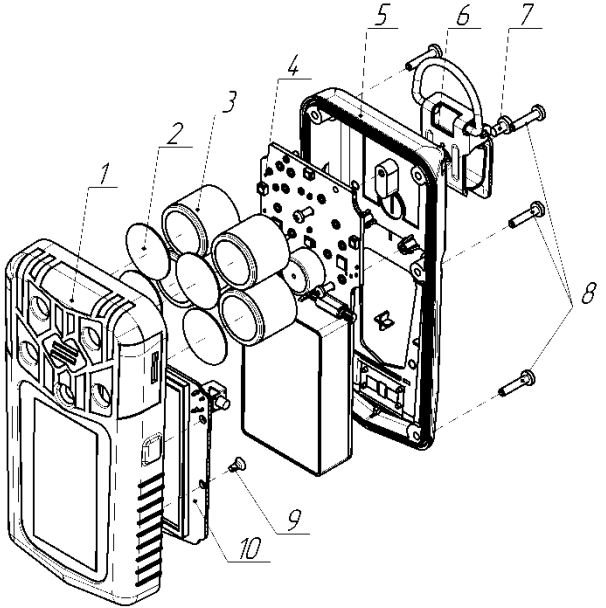
RISE

- ALARM 2;

RISE

10 GAS DETECTOR DESIGN

The gas detector PG ERIS-414 consists of the following main components:



1- Front part of the housing,
2- Replaceable filters,
3- Replaceable sensors,
4- Main module,
5- Rear part of the housing,
6- Clip for clamping to clothing,
7- Mounting screws of the clip,
8- Mounting screws of the device,
9- Mounting screws of the module 10,
10- Display module.

Device battery is located in separate isolated box. Battery is the only undismountable part of the main module (4).

Display module (10) consists of plane, control button and OLED display.

11 TECHNICAL SPECIFICATIONS

Sampling method	Diffusion
Metrological performance of the gas detector	According to Annex A
Limits of permissible additional error associated with ambient temperature change for every 10 °C in ratio of the reference error	0.25
Reading identification time T90, s, not more	Sensor CT – 14 Sensor IR – 10 Sensor EC – 45, In particular: H2S – 12 CO – 18 O2 – 22
Overall dimensions (height × width × thickness), mm, not more than	120x63.5x31.5 without clip
Weight, g, not more than	250
Operation conditions: - ambient temperature, °C	from minus 45 to plus

- atmospheric pressure, kPa - relative air humidity, %	50 from 84 to 106.7 not more than 95 (without moisture condensation)
Voltage of battery self-contained supply, V	from 3.6 to 4.2
Continuous work time, h, minimum	8*
Device standard charging time, h	2**
Average time between failures, h, minimum	16000
Full average service life, minimum	10
Explosion proof Certificate	1Exdia IICT4Gb X No. TS RU C-U.MY62.V.04130
Ingress protection rating	IP 66

Notes:

*** Maximum operation period is up to 20 hours and depends on sensors model and device operation conditions.**

**** While using network adapter supplied by the manufacturer and depending on the charger capacity.**

Device characteristics:

Alarm	In normal operation conditions, warning, failure. Refer to clause 10
Audible alarm	Piezoelectric acoustic generator with sound intensity of 100 dB over a distance of 0.3 m
Visual alarm	Three red LEDS on the edges of the housing
Display	Graphic OLED display
Self-diagnostic test	Is carried out during switching on and during operation
Calibration	Zero and span calibration
Sensors	Automatic zero calibration during switching on (additional functions)
Battery	Lithium-ion polymer battery
Charger	Dock station with USB connector and charge indicator

This device contains lithium-ion polymer battery. Used up lithium batteries are subject to obligatory disposal. Do not dismantle the battery and incineration it. Do not dispose the battery with other municipal solid wastes.

The used up battery shall be disposed by the certified waste disposal organization or hazardous materials collector.

12 ALARM

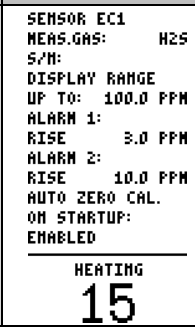
12.1 Visual, audible and vibration alarm

Event	Visual alarm	Audible alarm	Vibration alarm
Normal operation			
Switching on	1 short red and 1 long signal	1 short and 1 long signal	1 long signal
Switching off	4 short and 1 long red signal	4 short and 1 long signal	-
Battery discharge	2 short green signals in 30 seconds	2 short signals in 30 seconds	1 long signal in 30 seconds
Energy safety mode	green blinking one time per second	-	-
Warning			
Exceeding ALARM 1	3 short red signals one time per second	3 short signals one time per second	long intermitten t signal

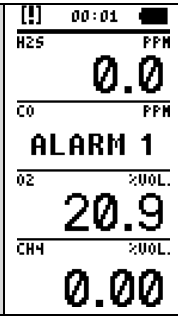
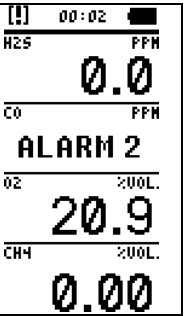
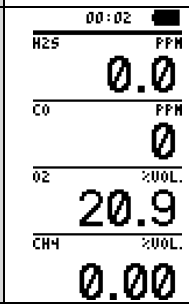
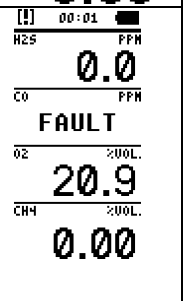
Exceeding ALARM 2	intermittent frequent red signal	intermittent frequent signal	long intermitten t signal
Failure alarm			
General fault	long red signal one time per second	-	-
Sensor fault	long red signal one time per second	-	-
Indication range is exceeded	long red intermittent signal	long intermittent	long intermitten t signal

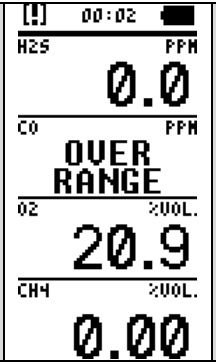
Gas detector is an individual safety device. The user bears the sole responsibility for the taken measures in case of ALARM 1, ALARM 2 or indication range exceeding signal!

12.2 Indication on display

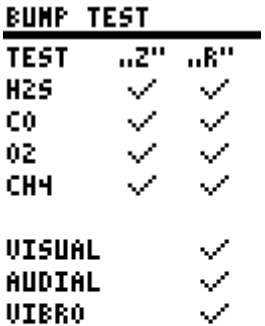
Detector mode	Display indication	Detector mode	Display indication
PG ERIS-414 self test in progress		Switching on Warming up	

SENSOR EC1 meas.gas display range up to ALARM 1 RISE ALARM 2 RISE auto zero cal. on startup: enabled startup remaining	■H2S ■CO ■O2 ■CH4 SHORT PRESS ZERO CALIBRATION LONG PRESS DROP	Measuring mode	00:03 H2S PPM 0.0 CO PPM 0 O2 %VOL. 20.9 CH4 %VOL. 0.00

ALARM 1		ALARM 2	
		FAULT	

OVER RANGE			05

13 BUMP TEST



VISUAL - light alarm check;
AUDIAL - sound alarm check;
VIBRO - vibration signal check.

- The gas detector will automatically test zero calibration of sensor, the symbol ✓ will be displayed in Z column in case of satisfactory rest results, and symbol ✗ will be displayed if the results are unsatisfactory.
- When Z column is filled in, supply gas mixture exceeding ALARM 1 range to each sensor.

ALARM 1 value for each sensor is specified in ABOUT DEVICE submenu, please refer to clause 9.4. The procedure of gas mixture supply to gas detector sensors is described in clause 15 of the present manual.

- Wait till the gas detector gives ALARM1 exceeding signal. R, VISUAL, AUDIAL columns are filled in automatically.

- If the BUMP TEST is satisfactory, the following symbol will appear at the end of the test✓. You may start working. The symbol ✗ appears, when the gas detector does not operate correctly, we recommend you to calibrate gas detector.
- Hold the button to exit the BUMP TEST mode.
- The test results are saved in the archive of the gas detector.
- We recommend to perform the test before each use of the gas detector.

14 BATTERY CHARGE

Charge gas detector PG ERIS-414 in the ambient temperature range from 0 till +30 °C. If the gas detector was used or placed for storage at a negative temperature, hold the gas detector within 2–4 hours at a temperature from 0 to +30 °C before the battery charge.

The battery shall be charged as follows:

– in case of discharge alarm;

– not less than one time per six months in case of long intervals between gas detector operation or in case of long storage;

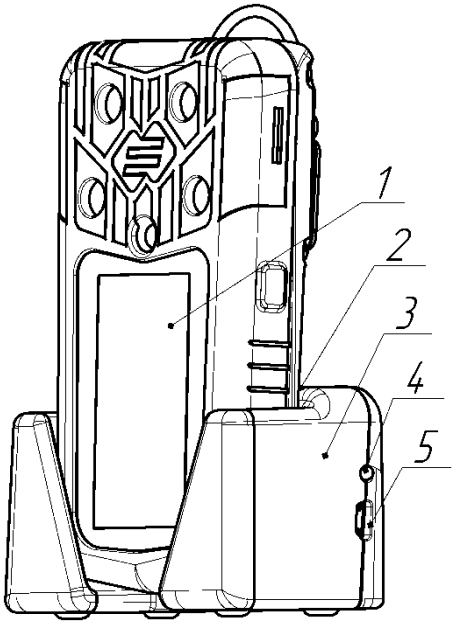
– in case of low charge indication;

The time of battery charge is 2 hours*.

***We recommend to use AC adapter included in the scope of supply by the manufacturing company.**

Battery charge devices:

Dock station ..... 1 piece
SWI5-5-E-I38 AC adapter ..... 1 piece
Interface cable USB2.0 ..... 1 piece



When the low-power supply source is used, the gas detector charging time may be increased.

To charge gas detector PG ERIS-414, connect in series interface cable USB2.0 and AC adapter SWI5 included in the scope of supply to the plug connector (5) of dock station, connect AC adapter to the power supply source (220 V).

The charging is possible via 5 V power source (for example – PC). In this case make connection without SW15 AC adapter.

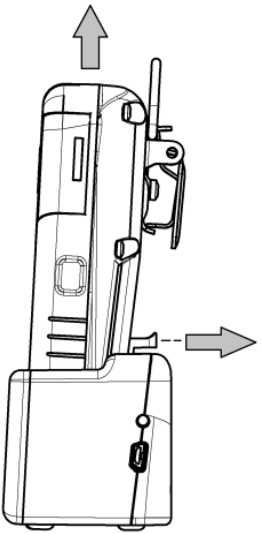
After power supply connection, make sure the dock station indicator (4) glows green.

Install the dock station to the horizontal surface. Insert the gas detector to the dock station (3). The indication of battery charge level starts growing. The gas detector is charging.

If the dock station indicator glows red, the gas detector charging is impossible until the fault correction:

- low power. Correction: use more powerful supply source.
- failure of the dock station power board. When such failure occurs, contact the Technical Support Service of the manufacturing company.

When the displayed battery symbol indicates the complete battery charge, remove the gas detector from the dock station. To do it, pull the tab (2) and remove the gas detector rising it up.



15 CALIBRATION

15.1 General provisions

Calibration mode is intended for zero and span calibration of the gas detector.

Perform calibration only in the safe area free from dangerous gases and with oxygen content not higher than 20.9%.

Perform calibration at an ambient temperature of 20±5 °C.

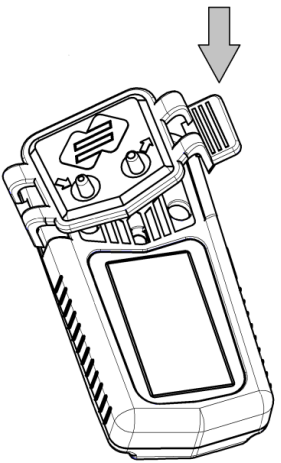
If the gas detector was used or placed for storage at a negative temperature, hold the gas detector within 3–4 hours at a temperature from 0 to +30 °C before the calibration.

Perform zero calibration at a temperature and environmental relative humidity corresponding to the measurement conditions.

Perform span calibration at least one time per 6 months.

15.2 Calibration procedure:

➢ Put the calibration cap to the gas detector till it clicks as shown in the figure.



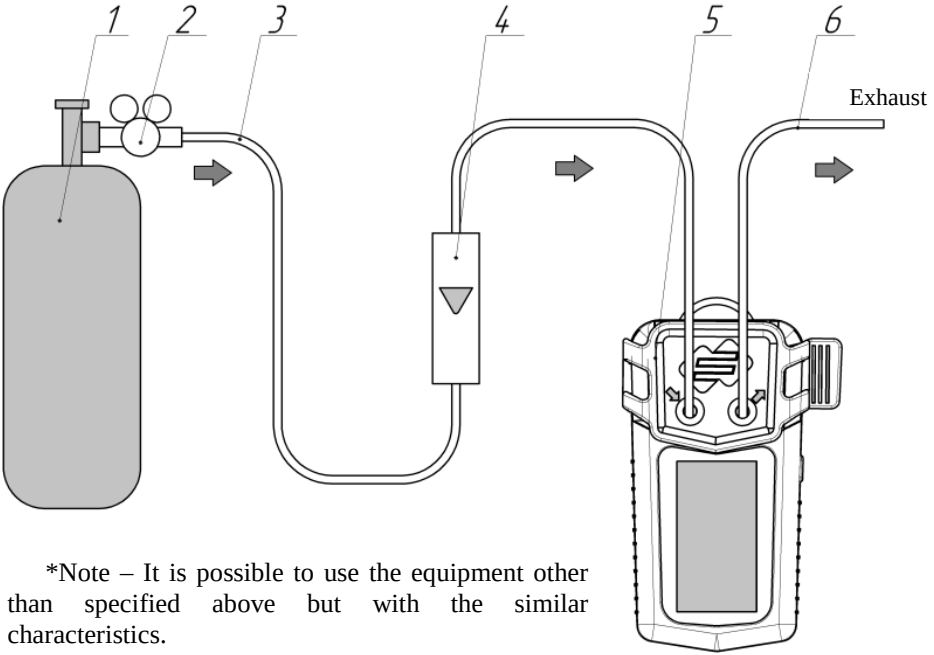
➢ Use zero calibration gas or perform calibration in clear area without any residual amounts of the measured gas, see clause 15.3.

➢ To perform calibration it is required to use state standard samples of the calibration gas mixtures with the stated percentage content of the measured gas. Calibration concentration for each sensor is specified in ABOUT DEVICE submenu. It is possible to use multicomponent mixture with the stated concentrations.

The calibration concentration could be changed using software available at www.eriskip.com, please refer to clause 17.

➢ Connect the equipment as shown in the figure:

1 – Cylinder of state sample of calibration gas mixture, zero gas;
2 – pressure regulator BKO-25-MG;
3 – PVC tube 6x1 or F-4;
4 – variable area flow meter PM-A-0.063GUZ;
5 – gas detector PG ERIS-414 with the calibration cap;
6 – discharge tube*.
6 – discharge tube*.



*Note – It is possible to use the equipment other than specified above but with the similar characteristics.

⩤ Enter the gas detector calibration mode.

To do it:

⩤ Press button to enter main MENU;

⩤ Select ZERO CAL. or SPAN CAL. submenu;

⩤ Select sensor for calibration;

⩤ If the calibration multicomponent gas mixture is used, enter SELECT ALL submenu, thus initiating simultaneous calibration of all sensors;

⩤ Press CALIBRATE (please refer to calibration procedure, clauses 15.4, 15.5, 15.6).

⩤ During the span calibration the values will appear on a yellow background in the column against the selected sensors. Wait till the values get steady and the field colour is changed to black.

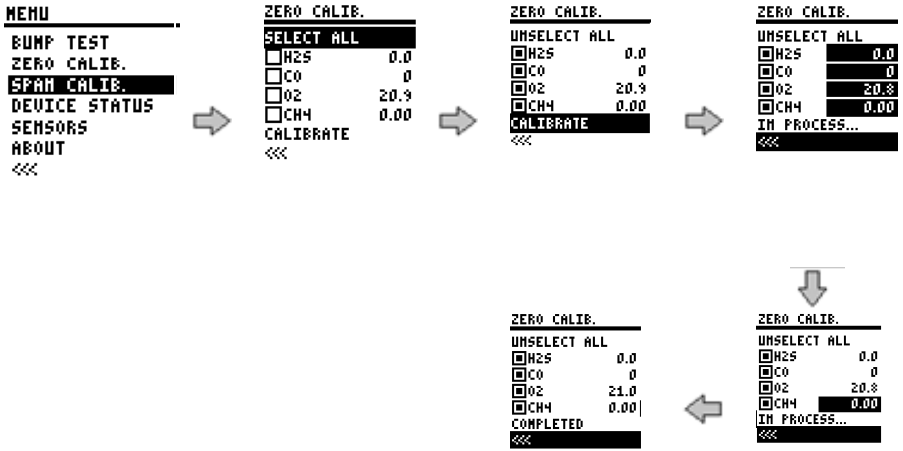
⩤ Wait till CALIBRATION... line is changed to DONE.

⩤ Calibration is completed.

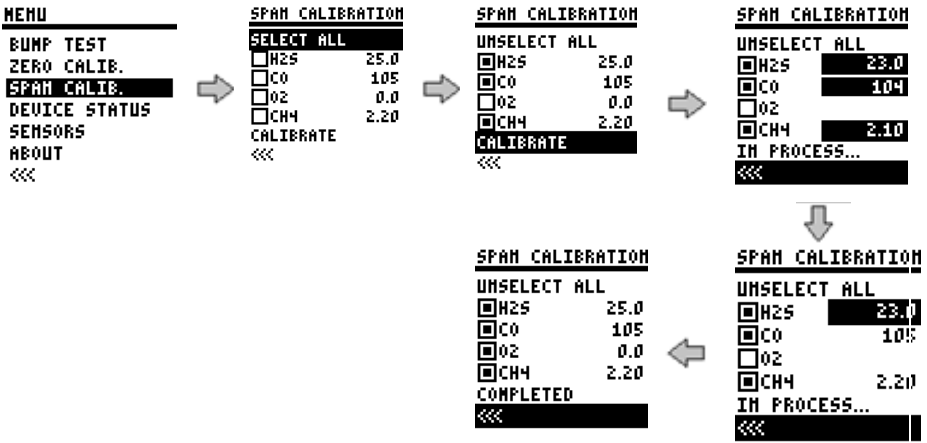
15.3 Zero calibration using zero grade air

Zero calibration of the gas detector using zero grade air shall be performed periodically and in case of particularly important measurements, zero calibration shall be performed immediately prior to the measurement. The calibration shall comply to procedure described in clause 15.4 in clear area without any residual amounts of the measured gas.

15.4 Zero calibration procedure

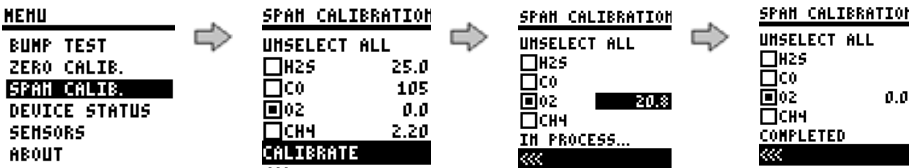


15.5 Span calibration procedure using calibration multicomponent gas mixture



15.6 Span calibration procedure for sensor O_2

Span calibration of sensor O_2 shall be performed using oxygen free gas mixture, for example compressed nitrogen. The calibration is done by complete oxygen displacement.



16 VERIFICATION

- The primary verification shall be performed before the gas detector is put in operation and after the repair, and periodic verification shall be performed during the operation life.
- Verification interval is 1 year.
- The verification shall comply to MP 83-221-2016 procedure.
- The gas detectors meeting the verification procedure requirements are accepted for further service.

The calibration was performed using software of manufacturing company. Software and user guide are available for download at **www.eriskip.com**.

17 DATA EXCHANGE WITH PC

To exchange data with PC, use the dock station, interface cable (please refer to clause 12) and software.

Software and user guide are available at www.eriskip.com or contact the Technical Support Service of the manufacturing company service@eriskip.ru.

If the gas detector was used or placed for storage at a negative temperature, hold the gas detector within 2–4 hours at a temperature from 0 to +30 °C before connection to PC.

Functions that could be changed using software:

- Switching on/off zero self-calibration of each sensor;
- Change of ALARM 1 and ALARM 2 values;
- Setting of date and time;
- Setting of archiving events;
- Adjustment of gas detector;
- Verification of gas detector;
- Calibration of gas detector;
- Configuration of measuring channels from sensors library;
- Setting of calibration concentration values;
- Switching on/switching off additional functions;
- Blocking preventing the gas detector switching off out of the dock station;
- Blocking preventing the gas detector calibration using menu (calibration only using software and PC)..

18 REPAIR

Repair of the gas detector shall be carried out only by technicians acquainted with the operation documentation and operational rules for electrical installations, who passed exam in occupational safety and have electrical safety qualification level.

18.1 Types of the gas detector repair

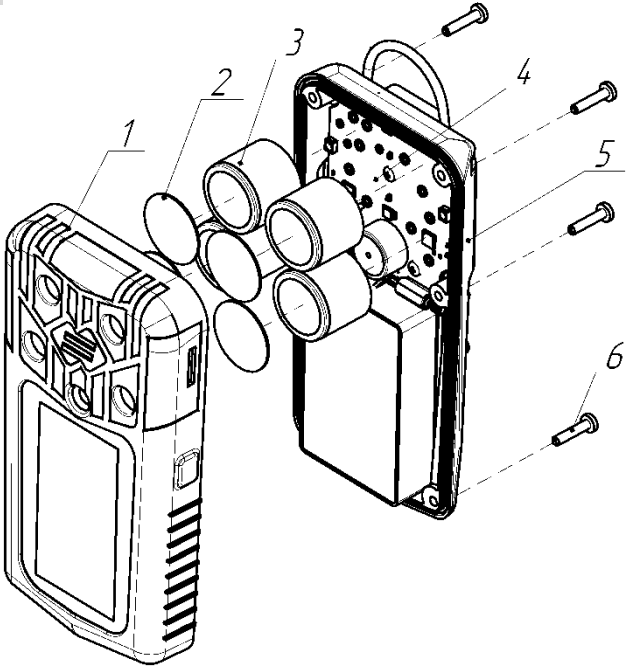
The routine repair of the gas detector is performed by the operating company or manufacturing company.

The routine repair includes:

- filter replacement;
- sensor replacement;
- the repair by replacement of components and printed circuit boards shall be performed by the manufacturing company or in the service centres authorised by the manufacturer.

18.2 Filter replacement

- make sure the gas detector is switched off;
- unscrew 6 screws (6) in the rear part of the gas detector (5), disassemble the rear part (5) along with the main board (4);
- replace filter (2);
- assemble the gas detector in reverse order.


1
2
3
4
5
6

18.3 Sensor replacement

1) The sensor shall be replaced when zero or span calibrations are impossible, and the message ERROR is displayed.

2) The sensor could be replaced by the customer only after expiration of the gas detector warranty period. In all other cases the sensor shall be replaced by the manufacturing company or in service centres authorised by the manufacturer.

3) To replace the sensor, perform as follows:

- make sure the gas detector is switched off;
- unscrew 6 screws (6) in the rear part of the gas detector (6), disassemble the rear part (5);
- remove sensor (3), disassembling it from the socket at the main board (4);
- install new sensor;
- assemble the gas detector in the reverse order, making sure that the sensor filter is located in its place (2) - the socket connector located in the upper part of the housing (1);
- switch on the gas detector, perform zero and span calibration in compliance with zero and span calibration procedure described in clause 15.

After sensor replacement, the primary verification of the gas detector shall be performed in compliance with MP 83-221-2016.

18.5 Battery replacement

The battery shall be replaced with the main module, that's why the replacement shall be made by the manufacturing company or in the service centres authorised by the manufacturer.

19 WARRANTY STATEMENT AND CLAIMS INFORMATION

➢ The manufacturer guarantees the gas detector compliance with the requirements of specifications and design documentation if the customer observes the operation conditions.

➢ The warranty period comprises 12 months starting from sales date (packing date) the gas detector.

➢ After the correction of the gas detector failures (by claims), the warranty period shall be extended for the period equal to that during which the gas detector is out of operation due to the detected failures.

➢ On a unilateral basis the customer shall draw up the malfunction report upon the detection of failures and defects during the warranty period. The gas detector along with the datasheet and malfunction report shall be sent to the manufacturing company.

➢ The malfunction report shall be technically justified with indication of product name, serial number, date of manufacture, nature of defects and possible occurrence causes.

➢ The manufacturing company waves the warranty claims in the following cases:

– warranty period expiration;

– the datasheet of the gas detector is missing;

– violation of operation conditions;

– mechanical damage of the gas detector;

– the gas detector is repaired, modified or upgraded by technicians not authorized by the manufacturing company;

– the defect appears as a result of improper use of the gas detector, including failures caused by the gas detector connection to the power supply sources not corresponding to the standard parameters of power mains and other similar external factors;

– defects resulted from force-majeure circumstances (including high-voltage discharges, lightings), accidents, deliberate and incautious acts of the consumer or third parties.

➢ Manufacturing company address:

✉ Promyshlennaya street 8/25, Chayckovsky, Perm region, 617762, Russia
OOO ERIS

Phone: +7 (34241) 6-55-11, e-mail: info@eriskip.ru

20 DISPOSAL

Do not dispose lithium-based batteries as domestic waste. Such batteries have the marking as shown in the figure.

Do not disassemble and burn batteries. Do not dispose the battery along with the other household solid wastes. The spent battery shall be subject for disposal by the certified recycling company or company collecting dangerous materials.

APPENDIX A. METROLOGICAL CHARACTERISTICS

Detected component	Indication range of volume percentage	Measurement range of volume percentage	Limits of allowable intrinsic error, %	
			reduced	relative
Oxygen O_2	from 0 to 30 %	from 0 to 10 % over 10 to 30 %	± 5	± 5
Sulphur dioxide SO_2	from 0 to 150 ppm	from 0 to 20 ppm over 20 to 150 ppm	± 10	± 10
Hydrogen sulphide H_2S	from 0 to 100 ppm	from 0 to 10 ppm over 10 to 100 ppm	± 10	± 10
Hydrogen cyanide HCN	from 0 to 30 ppm	from 0 to 10 ppm over 10 to 30 ppm	± 20	± 20
Carbon monoxide CO	from 0 to 1000 ppm	from 0 to 50 ppm over 50 till 1000 ppm	± 10	± 10
Ammonia NH_3	from 0 to 100 ppm	from 0 to 30 ppm over 30 to 100 ppm	± 15	± 15
Ammonia NH_3	from 0 to 400 ppm	from 0 to 30 ppm over 30 to 400 ppm	± 15	± 15
Chlorine CL_2	from 0 to 50 ppm	from 0 to 5.0 ppm over 5.0 to 50 ppm	± 20	± 20
Nitrogen oxide NO	from 0 to 250 ppm	from 0 to 50 ppm over 50 to 250 ppm	± 10	± 10

Nitrogen dioxide NO_2	from 0 to 100 ppm	from 0 to 15 ppm over 15 to 100 ppm	± 15	± 15
Ozone O_3	from 0 to 1 ppm	from 0 to 0.05 ppm over 0.05 to 0.3 ppm	± 20	± 20
Total hydrocarbons C_xH_y (based on methane)	from 0 to 100 % LEL	from 0 to 50 % LEL	± 5	-
Total hydrocarbons C_xH_y (based on propane)	from 0 to 100 % LEL	from 0 to 50 % LEL	± 5	-
Methane CH_4	from 0 to 4.4 % (from 0 to 100 % LEL)	from 0 to 2.2 % (from 0 to 50 % LEL)	± 5	-
Ethane C_2H_6	from 0 to 2.5 % (from 0 to 100 % LEL)	from 0 to 1.25 % (from 0 to 50 % LEL)	± 5	-
Ethylene C_2H_4	from 0 to 2.3 % (from 0 to 100 % LEL)	from 0 to 1.15 % (from 0 to 50 % LEL)	± 5	-
Butane C_4H_{10}	from 0 to 1.4 % (from 0 to 100 % LEL)	from 0 to 0.7 % (from 0 to 50 % LEL)	± 5	-

Hexane C_6H_{14}	from 0 to 1.0 % (from 0 to 100 % LEL)	from 0 to 0.5 % (from 0 to 50 % LEL)	± 5	-
Propane C_3H_8	from 0 to 1.7 % (from 0 to 100 % LEL)	from 0 to 0.85 % (from 0 to 50 % LEL)	± 5	-
Propylene C_3H_6	from 0 to 2.0 % (from 0 to 100 % LEL)	from 0 to 1.0 % (from 0 to 50 % LEL)	± 5	-
Pentane C_5H_{12}	from 0 to 1.4 % (from 0 to 100 % LEL)	from 0 to 0.7 % (from 0 to 50 % LEL)	± 5	-
Methanol CH_3OH	from 0 to 5.5 % (from 0 to 100 % LEL)	from 0 to 2.75 % (from 0 to 50 % LEL)	± 5	-
Hydrogen H_2	from 0 to 4.0 % (from 0 to 100 % LEL)	from 0 to 2.0 % (from 0 to 50 % LEL)	± 5	-

APPENDIX B. FAILURES

Gas detector PG ERIS-414 has self diagnostic function that helps to detect failures. In case the gas detector does not work or works incorrectly, check possible failures of gas detector PG ERIS-414 that are indicated in DEVICE STATUS submenu, here you could see the error code and take required correction actions.

The short list of error codes is presented in the table below.

The complete list of errors and troubleshooting procedures is described in the repair manual and is available on request.

Code	Error
A01	Critically low battery charge level, the device will be switched off immediately.
A04	Low battery charge level
A07	Indication range is exceeded, sensor EC1
A10	Indication range is exceeded, sensor EC2
A13	Indication range is exceeded, sensor O_2
A16	Indication range is exceeded, sensor CT
A19	ALARM 1 is exceeded, sensor EC1
A22	ALARM 1 is exceeded, sensor EC2

A25	ALARM 1 is exceeded, sensor O_2
A28	ALARM 1 is exceeded, sensor CT
A31	ALARM 2 is exceeded, sensor EC1
A34	ALARM 2 is exceeded, sensor EC2
A37	ALARM 2 is exceeded, sensor O_2
A40	ALARM 2 is exceeded, sensor CT
A43	Time is not set
A46	Temperature is too low to perform battery charge
A49	The temperature sensor is not read, temperature value of 25 °C is used.
A52	The pressure sensor is not read, pressure value of 100000 Pa is used.

If you have any questions related to the gas detector operation, please feel free to contact the Technical Support Service of the manufacturing company:

✉ E-mail: service@eriskip.ru

Portable gas detectors. Phone: +7 (34241) 6-55-11 (ext. 139 156)

REVISION RECORD SHEET

Form 2 GOST 2.503–74

Revision record sheet									
Changed	Page No.				Total number of pages in document	Document No.	Registration No. and date of covering document	Signature	Date
	amended	replaced	new	cancelled					

NOTES

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v. 1.0

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