

SOEKS



Dosimeter
SOEKS 01M

ISO 9001 Certificate



CONTENTS

ISO 9001 Certificate.....	2
Purpose.....	4
Contents of delivery.....	4
Technical specifications.....	5
Precautionary measures.....	6
External appearance of the product.....	7
Electrical power supply.....	8
Screen symbols.....	9
Working with the instrument. Displayed screens.....	11
“Menu” screen.....	11
“Radiation background” screen.....	11
“Search” screen.....	13
“Accumulated dose” screen.....	14
“Adjustments” screen.....	15
“Settings” screen.....	15
“Threshold” screen.....	15
“Picture” screen.....	16
“Sound” scree.....	16
“Power supply” screen.....	17
“Language” screen.....	17
“Reset the dose” screen.....	18
Instrument switching on/off.....	19
Keypad locking.....	19
Operation start.....	20
Measuring of the objects radiation background.....	20
Accumulated dose measuring.....	21
Marking and lead-sealing.....	22
Packaging.....	22
Transportation and storage.....	22
Technical maintenance.....	22
Manufacturer’s warranty.....	23

“SOEKS-01M” Dosimeter

Purpose

The “SOEKS-01M” dosimeter is meant to measure the radiation accumulated dose, to evaluate the radiation background level and to detect the objects, food products, construction materials contaminated with radioactive elements.

The “SOEKS-01M” dosimeter evaluates the ionizing radiation background based on the ionizing radiation power value (gamma-rays and beta particles streams) taking into account the X-ray radiation.

Contents of delivery:

The “SOEKS-1M” dosimeter is delivered in the following contents of delivery:

“SOEKS-01M” Dosimeter	1 pc
Operating instructions	1 pc
Batteries of AAA type	2 pcs
Packaging box	1 pc

As the ionizing radiation detector, the Geiger-Muller counter tube is used in the dosimeter.

The manufacturer reserves the right to equip the instrument with some additional features. Follow the new firmware versions for the instrument at www.soeks.ru. You may have your dosimeter firmware upgraded only in the manufacturer’s service center.

Technical Specifications

Radiation background level indicating range, $\mu\text{Sv/h}$	up to 999
Registered gamma-ray energy, MeV	starting from 0.1
Accumulated dose indicating range, Sv	up to 999
Warning thresholds, $\mu\text{Sv/h}$	from 0.3 to 100
Measuring time, seconds	starting from 10
Readings display	Continuous, numerical, graphic
Batteries	NiMH rechargeable batteries or batteries of AAA type, additional electrical power supply from a mains adapter or USB
Electrical power supply voltage range, V	2,0 - 3,1
Continuous running time with the display On, hours	up to 10
Overall dimensions: height x width x depth, not more than, mm	105x43x18
Display	Colour TFT display, 128x160
Operating temperatures range, $^{\circ}\text{C}$	from -20 to +60

Notes:

- The reliability of the instrument readings improves as the number of observations increases.
- The continuous running time is indicated with the use of the factory settings of the instrument and two batteries with the capacity of 1350 mAh.
- The factory settings are:
 - threshold – 1.2
 - maximum permissible dose limit – no
 - detector sound – On
 - display brightness – 2
 - automatic switching off of the display – in 1 minute
 - automatic switching off of the instrument – in 60 minutes
 - dose sound – On
 - buttons sound – On
 - volume level – 2

Precautionary measures

Before using the instrument, read carefully the following safety regulations and observe them strictly when using the instrument. The infringement of these regulations may cause the instrument faulty operation or complete failure of the instrument. The manufacturer's warranty does not apply to the cases resulting from the non-observance of the stated-below precautionary measures.

- Protect the product against heavy shocks and other mechanical actions which may cause the product damage.
- Do not use the instrument at high humidity and under water, avoid the instrument soaking: the instrument is not water-proof.
- Do not keep the instrument for a long time in places exposed to an intense sunlight or a high temperature since this may result in the batteries electrolyte leakage, instrument failure and injuries.
- Do not keep the instrument for a long time near appliances generating strong magnetic fields, for instance, near magnets or electric motors as well as in places where strong electromagnetic signals are generated, for example, close to radio transmitters' towers.
- Do not carry out measurements in the immediate vicinity of cell phones and microwave ovens since the instrument reading may be corrupted.
- Do not disassemble and do not try to repair the instrument by yourself.
- Do not connect the instrument with standard batteries inserted or without any batteries to a computer or a socket.
- When batteries inserting, strictly respect their polarity. Otherwise, the instrument may be damaged.

External appearance of the instrument



1. LCD colour display.
2. Left button – the cursor moving up.
3. Right button – the cursor moving down.
4. Middle button – instrument switching on/off, selection validation.
5. Mini-USB connector.
6. Battery compartment.

Electrical power supply

On the reverse side of the product, the battery compartment cover is located. For the electrical power supply of the instrument, the rechargeable batteries of the NiMH type or standard batteries of the AAA type may be used.

In the lower part of the battery compartment, the trade mark of the “SOEKS” manufacturer and the hardware board model are indicated.

The lower part of the instrument accommodates the mini-USB connector used for the rechargeable batteries charging from the USB port of a computer or a special mains supply source with the output service voltage of 5 volts.

How to insert correctly the batteries?

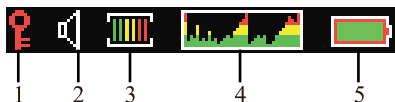
- When batteries inserting, strictly respect their polarity. Otherwise, the instrument may be damaged.
- After the instrument switching off, the batteries may stay in the instrument since the rechargeable batteries and the standard batteries are not discharged when the instrument is switched off.
- If you plan not to use the instrument for a long time, it is recommended to remove the batteries after the instrument switching off.

Attention!

Do not connect the instrument to a battery charger or a computer with the batteries inserted in it. This may cause the batteries heating or failure, the electrolyte leakage, the external appearance damage or complete failure of the instrument.

Screen symbols

All the screens show the following continuously displayed elements:



1. Keypad locking indicator

- The keypad is locked – the indicator is displayed only when the keypad is locked.

2. Sound indicator

- sound is switched on.
- sound is switched off because of the rechargeable batteries low condition.
- sound is switched off.

3. Accumulated dose threshold indicator

- the green colour of the indication elements means no excess of the established threshold of the accumulated dose.
- the yellow colour of the indication elements means no excess of the established threshold of the accumulated dose but the dose value has approached to the preset threshold.
- the established threshold of the accumulated dose is exceeded. The audible warning signal is emitted.

4. Diagram

The diagram shows the radioactivity during the last 37 seconds.

The diagrams moves continuously from the left to the right, the column height displays the background radiation level: the higher the level, the higher the column. The columns may be of the green, yellow and red colours. The colour semantic information coincides with the indicator of the accumulated dose threshold.

5. Batteries charge status indicator

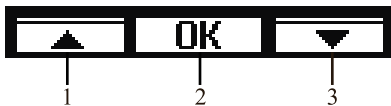
- the normal level of the batteries charge
- the batteries are slightly discharged
- the batteries are low
- the audible signal on the necessity to charge the rechargeable batteries or to insert new batteries is emitted. When the batteries or rechargeable batteries are low, the audible signal is switched off automatically for the purpose of energy saving.

Attention!

In case of critically low charge status of the rechargeable batteries and automatic switching off of the instrument due to power supply absence, the received data corruption or loss are possible. The established settings may be lost. That is why if the red indicator lights up, it is necessary to connect immediately the instrument to a battery charger or to replace the batteries. At that, it is recommended to previously switch off the instrument by pushing the [OK/MENU] button.

Help line

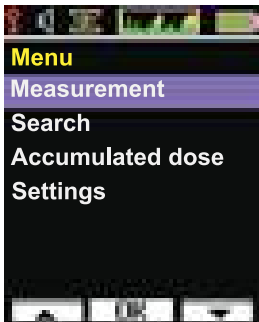
The Help line contains the names of the functions of the corresponding control buttons.



1. CURSOR UP – moving up the list
2. OK/MENU – entering, selection validation
3. CURSOR DOWN – moving down the list

Working with the instrument. Displayed screens

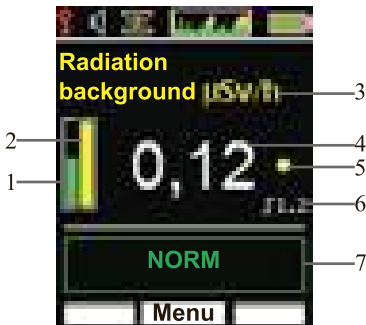
“Menu” screen



Select an item in the menu and press the “OK” button.

The “Measurement” item allows to go to the “Radiation background” screen, the remaining names of the menu items correspond to the screens names.

“Radiation background” screen

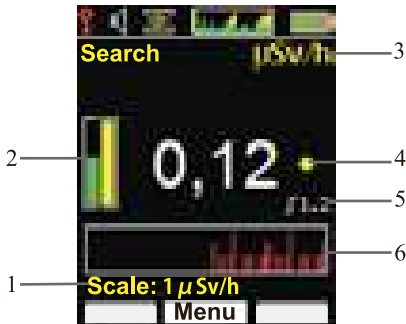


1. The indicator of the measurements results readiness: the complete filling takes place during 10 seconds.
2. The indicator of the measurement accuracy: as the accuracy increases, the indicator is filled with the yellow colour. With each new measurement (10 seconds), the column of the accuracy indicator grows up to the complete filling. The complete filling takes place within 2 minutes (12 measurements).

3. The measurement units.
4. The radioactivity level. Displayed with large figures in the center of the display. During the first measurement, the word “MEASUREMENT” is displayed.
5. The radiation particles detecting indicator. If the radiation particles are frequent, the indicator blinks in the yellow and red colour; if the radiation particles are rare, the indicator blinks in the yellow colour.
6. The threshold.
7. The information message on the radiation background status based on the radiation safety standards (RSS – 99/2009):
 - if the measurement result of the radiation background is less than 0.4 $\mu\text{Sv/h}$, the information message “NORM” is displayed in the green colour.
 - if the measurement result of the radiation background makes from 0.4 to 1.2 $\mu\text{Sv/h}$, the information message “ELEVATED” is displayed in the yellow colour.
 - if the measurement result of the radiation background exceeds 1.2 $\mu\text{Sv/h}$, the information message “DANGEROUS” is displayed in the red colour.

“Search” screen

The “Search” mode is meant to promptly search the radiation hazard sources and to assess their radiation power.



1. The scale range of the indicator. The maximum height of the display element corresponds to the indicated value.
2. The indicator of the measurements results readiness: the complete filling takes place during 10 seconds.

Should, during the measurements carrying out, sharp variations of the radiation background be found such as: elevations of more than three times or a decrease of 10 times, the accuracy indicator is reset to zero. Thanks to this feature, the detection of sharp variations of the radiation background with display of the reliable readings takes place within a time period not exceeding 10-20 seconds.

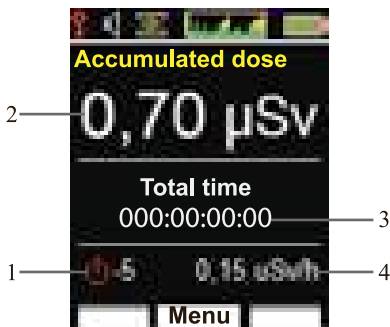
3. The measurement units.
4. The radiation particles detecting indicator. If the radiation particles are frequent, the indicator blinks in the yellow and red colour; if the radiation particles are rare, the indicator blinks in the yellow colour.
5. The threshold.
6. The diagram of the radiation background power.

The diagram displays the values of the radiation background power measured during the last two minutes.

For the sake of convenience of data perception, the diagram is scaled automatically.

To return to the “Menu” screen, press the [menu] button.

“Accumulated dose” screen



1. The number of the instrument starts during the current session.
2. The numerical value of the radiation accumulated dose.
3. The duration of the measurement session of the accumulated dose (“Total time”) (the aggregate time of the instrument operation after the dose reset) in the format: ddd:hh:mm:ss (days:hours:minutes:seconds).
4. The current value of the radiation background.

Attention!

The displayed accumulated dose belongs to the time of the current session only.

When the “Dose reset” item is selected and carried out on the “Settings” screen, the session time and the accumulated dose will be zeroed.

For the purpose of counting of the session duration time, the integrated timers are used.

During a measurement session, the instrument may be switched off and may stop to conduct measurements.

The number of the instrument starts is displayed on the screen.

To return to the “Menu” screen, press the [menu] button.

“Adjustments” screen

- Settings
- Language
- Reset the dose
- Exit

- Settings – press the [OK] button to go to the “SETTINGS” screen.
- Language – push the [OK] button and select the required language in the appeared menu.
- Reset the dose – push the [OK] button to go to the “Reset the dose” screen.
- Exit – press the [OK] button to return to the “Menu” screen.

“Settings” screen

- Threshold
- Dose limit
- Picture
- Sound
- Electric power supply
- Exit

Select an item and press the “OK” button to go to the corresponding screen. The items names correspond to the screens names.

“Threshold” screen

- 1 – threshold value.
- 2 – return to the main menu.

In this section you may choose the threshold of the radiation background level.

In case of excess of the preset threshold of the radiation background, the intermittent audible alarm will be emitted.

If the “no” option is chosen, the audible signal will not be emitted.

To return to the “Settings” screen, select the “Exit” option at the end of the values list and press the “OK” button.

“Picture” screen

- brightness;
- OFF, minutes.
- Exit

Set the desired properties of the instrument display:

- **Brightness**

Select the low, medium or high level of brightness of the display. For the purpose of the energy saving or the prolongation of the service life of the batteries, the low or medium brightness level of the display is recommended for use.

- **Off, minutes**

Specify the working time of the display illumination in the absence of the pressed buttons. The desired time value may be selected in the list of the preset values from 1 to 15 minutes.

If the “no” option is chosen, the display illumination will be on as long as the instrument is switched on.

- To return to the “Settings” screen, select the “Exit” option.

“Sound” screen

- Sound is switched on
- Sound of the detector
- Sound of the dose
- Sound of the buttons
- Volume
- Exit

To switch on or off the audible signals, select: “Yes” or “No”.

If the “Yes” option is chosen, the short or long audible signals indicating the corresponding events will be allowed.

The “Volume” option allows to choose one of three levels of the audible signals: 1 – low, 2 – medium, 3 – loud.

To return to the “Settings” screen, select the “Exit” option.

“Power supply” screen

- OFF, minutes
- Exit

Specify the time interval upon the expiration of which the instrument will switch off automatically.

In case of automatic switching off, the value of the radiation accumulation dose is saved in the instrument memory.

If the “no” option is selected, the instrument will be on until it is switched off by pressing the [OK] button.

To return to the “Settings” screen, select the “Exit” option.

“Language” screen

In the appeared menu, select the required communication language.

“Reset the dose” screen

- No
- Yes
- Exit

In this section, you may clear the reading of the accumulated dose counter.

Select the desired action.

If the “Yes” option is chosen and the [OK] button is pressed, the accumulated dose value will be “reset/cleared” in the instrument memory.

To return to the “Adjustments” screen, select the “Exit” option.

Instrument switching on/off

1. To switch on the instrument, press and hold the [OK/MENU] button till the display switches on (the display illumination lights up), after that, release the [OK/MENU] button.

- When the instrument is switched on, the startup screen with the company logotype shows up.

2. To switch off the instrument, press and hold the [OK/MENU] button till the screen with the company logotype appears. After that release the [OK/MENU] button.

Pressing and holding the [OK/MENU] button will switch off the instrument in any operating mode of the instrument. At that, the data on the radiation accumulated dose will be saved in the instrument memory.

The instrument switching off in some other way, for instance, owing to the complete discharge of the batteries or after the removal of the batteries, is not recommended since the measured data of the accumulated dose may be lost.

3. The instrument switches on automatically after the instrument connecting to the mini-USB connector. After the instrument switching off, the batteries may stay in the instrument since the rechargeable batteries and the standard batteries are not discharged when the instrument is switched off. If you plan not to use the instrument for a long time, it is recommended to remove the batteries after the instrument switching off.

4. When the batteries/rechargeable batteries charge level is low, the instrument may fail to switch on or may switch off automatically, at that, the fading crossed battery pictogram blinks on the display.

Keypad locking

To lock the keypad, press and hold the left button till the keypad locking indicator becomes red and starts blinking.

To inactivate the keypad locking, press and hold the left button till the keypad locking indicator disappears.

If the keypad is locked and the display went out, after striking any key, the display will light up shortly (for 5 seconds) and will go out again.

Operation start

1. Insert the batteries.
2. Switch on the instrument. Prior to the measurements conduct, it is recommended to customize your instrument: set the desired parameters using the corresponding settings on the display.
3. After switching on, the instrument enters automatically the “Measurement” mode and the radiation situation evaluation gets started. In 10 seconds the first result of the measurements shows up on the display, after which the next measurement cycle starts.

The measurements are carried out on a continuous basis until the instrument is switched off in any operating mode. The maximum accurate measurement results of the instrument are reached with the completely filled accuracy indicator (see page 12, paragraph 2). The assessment results exceeding the natural radiation background characteristic for a locality in question indicate the radiation pollution. radiation dose accumulation. The results obtained using this instrument may not be used for drawing the official conclusions about the radiation situation.

Radiation background measuring of objects

In order to measure the radiation background of the food products, construction materials and other objects, perform the following actions:

1. Measure the radiation background level at the distance of several meters from the examined object.
2. Approach the instrument immediately to the examined object with the perforated side exposed to the object and measure the radiation background at the shortest possible distance from the object.
3. Compare the obtained readings with the radiation background level of the environment obtained in paragraph 1. The received difference of the measurements carried out in accordance with paragraphs 1-2 represents the additional radiation background of the object.

In order to assess the radioactive pollution of the liquids, the measurement should be performed above the open surface of the liquid.

For the purpose of the instrument protection against the liquid ingress on the surface or inside the instrument, it is recommended to place the instrument in a single-layer polyethylene bag.

Accumulated dose measuring

The radiation dose accumulation begins immediately after the instrument switching on and continues until the instrument is switched off irrespective of the operating mode in which the instrument was used. After the next switching on of the instrument, the dose accumulation is renewed.

To reset the accumulated data, go the “Reset the dose” screen and perform the required action.

Marking and sealing

The name of the product is indicated on the product enclosure.

The serial number and the date of manufacture are indicated in the battery compartment under the accumulator. The product is not sealed by the manufacturer.

Package

The packaging should ensure the safe and sound condition of the product during transportation and storage under the normal climate conditions.

Transportation and storage

The transportation of the packed product may be performed by any mode of transport and over all distances.

During transportation, the product should be protected against atmospheric precipitations.

The transportation conditions of the packed product should comply with the following requirements:

- ambient air temperature from -40°C to $+60^{\circ}\text{C}$.
- relative humidity at the temperature of $+25^{\circ}\text{C}$ of not more than 90%.

Before putting into operation, the product is to be stored in its pack at the manufacturer's warehouse at the ambient air temperature from -5°C to $+40^{\circ}\text{C}$ and the relative humidity of 80% at the maximum at the temperature of $+25^{\circ}\text{C}$. The product storage in the unpacked condition is not allowed.

The product, having been kept at a temperature below 0°C for a long time, should be maintained at the room temperature during 2 hours prior to its putting into operation.

Maintenance

The technical maintenance includes the following operations:

- dust removal from the external surface of the product;
- timely replacement or charging of the batteries;
- in case of sustained interruption in the product operation (exceeding 2 weeks), the batteries must be removed;
- clean the display with a soft cloth only.

The ingress of foreign objects inside the product is not allowed.

Manufacturer's warranty

The manufacturer guarantees the working capacity of the product subject to the observance by the user of the operating conditions, precautionary measures, storage and transportation regulations specified in the present operating instructions.

The product warranty period makes 24 months as from the date of its sale through the retail network and as from the date of receipt by the user in case of a non-market purchase. Should any defects be found in the product, the product warranty period is to be prolonged for the time during which the product was under the warranty repair and could not be used by the user.

For your convenience, we recommend you to read carefully the rules and regulations stated in the present operating instructions before applying for the warranty maintenance.

You are kindly requested to send all your claims relating to quality at the e-mail addresses indicated at www.soeks.ru, by telephone: +7 (495) 223-27-27 or at the following postal address: 127566, Moscow, Altufyevskoye shosse, 48, k.1, office 39. The warranty repair is performed at the manufacturer's plant.

The present warranty does not apply to the product if:

- the serial number does not correspond to the number indicated in the warranty coupon;
- the warranty coupon is not available, cannot be identified due to damage or presents corrections, erasures, crossingouts;
- the rules and restrictions of the conditions of the product transportation, storage and operation specified in the present operating manual were infringed;
- the malfunctions in the operation of the product appeared as a consequence of the third parties activities or the force majeure circumstances;
- the product or parts thereof present impact marks or other mechanical actions marks (scratches, cracks, chips, unfastened parts inside the product enclosure, colour spots on the display etc.);
- the malfunctions occurred as a result of the ingress of foreign objects, liquids, insects inside the product;
- the product was subject to dismantling, unauthorized repair or attempts to do this.

Acceptance and sale certificate

DOSIMETER SOEKS 01M

complies with TY HYJC 414313.010-TY performance standards and is recognized to be ready for operation

Head of Quality Control Department

signature

signature expansion

date

Sold by

name of retailing company

Date of sale

____/____/____

201____

Place of Seal

