SOEKS

DOSIMETER

QUANTUM

Сертификат соответствия/ Conformity Sertificate

СИСТЕМА СЕРТИФИКАЦИИ ГОСТ Р

ФЕДЕРАЛЬНОЕ АГЕНТСТВО ПО ТЕХНИЧЕСКОМУ РЕГУЛИРОВАНИЮ И МЕТРОЛОГИИ

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ПРОДУКЦИЯ

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ООО "СэЭнс", код ОКПО 83054002,
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ИНН 7842376568.

СЕРТИФИКАТ ВЫДАН
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НА ОСНОВАНИИ
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Маркирование продукции производится знаком соответствия по ГОСТ Р 50460-92
в соответствии с "Правилами сертификации" на изделия, на упаковке и сопроводительной документации. Схема сертификации 3

Руководитель органа О.Б. Ага

Эксперт К.В. Чуйков

Сертификат не применяется при обязательной сертификации

Сертификат ISO 9001/ Sertificate ISO 9001

Voluntary Certification System
«Unitary Standard»

№ РОСС RU.3609.04ЧЖ00 / EC.C.O.02.01.000777-12

CERTIFICATE OF CONFORMITY

issued to SOEKS, Limited Liability Company
Altuflevskoye shosse, h.48, bld. 1, pr.1, room 39, Moscow, 127566, Russia
TIN 7842376568

This is to certify that

Quality management system in respect to designing, manufacturing, sale,

warranty and maintenance service of electric and electrical devices

Conforms to the requirements of
GOST R ISO 9001-2008 (ISO 9001:2008)

Registration date: 07.03.2012 / Valid before 07.03.2015

Head of the Certification Authority: Finova N.A.

Chairman of the Committee: Artemov D. A.

005941

Manufacturer's warranty

The manufacturer guarantees efficient operation of the device provided that the user observes the operating conditions, safety measures, and requirements to storage and transportation described in this manual.

The warranty period for the device is 12 months after the device is purchased through a retailing network; in case of direct sales distribution, the warranty period begins after the ultimate user receives the device. If any malfunctions are detected in the device, the warranty period will be extended for time during which the device is under warranty repairs and the ultimate user is unable to use the device.

We recommend that you read carefully the instructions presented in this manual before contacting the warranty repair service.

Please send all your comments to our e-mail addresses at our official website: www.soeks.ru, telephone +7(495)223-27-27 or mailing address: 127566, Moscow, Altufyevskoye Shosse, 48, k.1, office 301.
Warranty repairs are done at the manufacturer's factory.

This guarantee will be void if:

- the serial number of the device is not the same as the number in the guarantee coupon;
- the guarantee coupon is not available or illegible because of damage, corrections or erasures;
- requirements to shipment, storage and operation described herein are violated;
- malfunction is caused by third party actions or a force majeure;
- the device or its component parts has signs of shock or other mechanical impact (scratches, cracks, chips, loose parts inside the case, color spots on the display, etc.);
- malfunctions are caused by foreign objects, liquids and insects inside the device;
- the user does or attempts to disassemble and repair the device.

CONTENTS

Dosimeter Quantum

Purpose

Dosimeter Quantum is designed for measuring the cumulative radiation dose and assessing the product radioactivity level and detecting objects, food or construction materials contaminated with radioactive elements.

Dosimeter Quantum can easily assess the level of radioactivity according to the power level of ion radiation (gamma radiation and beta particles stream) while taking into account x-ray radiation.

Base kit

Dosimeter Quantum has the following items included in the base kit:

Dosimeter Quantum	1 pcs
Passport	1 pcs
Rechargeable batteries (AAA size)	2 pcs
USB power cable-mini USB	1 pcs
Adapter block	1 pcs
Rigid paperboard box	1 pcs

A 2 Geiger-Muller counters is used as ion radiation sensor in our dosimeter Quantum. They are positioned on the right and left sides of the device.

The manufacturer reserves the right to incorporate additional functions into the device. Keep track of new versions of the firmware on our website at **www.soeks.ru**. You can update it yourself using Soeks Device Manager software.

Specification

Range of indicated background radiation level, mcSv/h	up to 1000
Measurement range of cumulative dose, Sv	up to 1000
Dose accumulation time	up to 999 days
History of background radiation measurements, more than	24 hours with 10 second increments
Registered gamma radiation energy	from 0.1
Levels, mcSv/h	from 0.3 to 100
Time of measurement, seconds	10
Display format of indication	Constantly, number and graphical
Power elements	AAA size batteries rechargeable or non-rechargeable
Power voltage range, V	1.9 - 3.0
Time of continuous work of the device, hours at least**	up to 700
Overall dimensions height x width x thickness, max, mm	130x52x18
Weight (without power elements), max, grams	71
Battery charging current, max, mA	300
Current consumption from charger or USB not more than	500
Output charger voltage	from 4.5 to 5.5
Display	Color TFT, 128x160
Operating temperature range, °C	from -20 to +60

Comment:
* Increasing the number of measurements will improve the reliability of readings.
** The time of continuous work of the device is up to 10 hours, with default settings and two batteries of capacity 1000mAh.

Precautions

Before using the product, please read carefully the safety measures below and strictly adhere to them when using the product. Violation of these rules may cause malfunction or cause total failure of the product. The manufacturer's guarantee will be void if the safety measures stated below are violated.

• Protect the product from shock and other mechanical impacts that can damage it.

• Do not use the product in conditions of high humidity, under or in contact with water: the product is not waterproof.

• Do not leave the product in places with intensive sun light or high temperatures for a long time, this can cause electrolyte leakage from power elements, failure of the product, and injuries.

• Do not leave the product for a long time near devices that generate strong magnetic fields, such as magnets or electric motors, and where strong electrical magnetic signals are generated, such as transmitter towers.

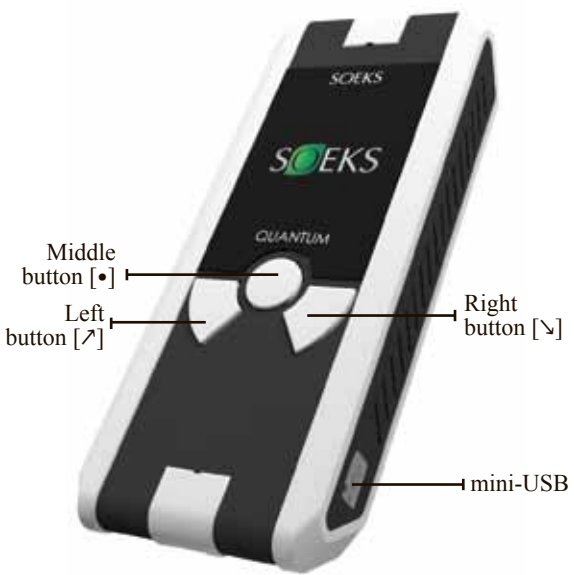
• Do not perform measurements close to cell phones and microwaves, this may affect the instrument's readings.

• Do not disassemble and do not try to repair the device on your own.

• Do not connect the device to a PC or socket while it has regular batteries installed.

• Strictly observe polarity when you install power elements, otherwise the device may overheat and fail.

Appearance of the device



Left button [↗] - scrolls the menu (list) up. When the top (first) position on the list is reached, the cursor moves to the bottom (last) position. Decreases the value of the parameter.

Right button [↘] - scrolls the menu (list) down. When the bottom (last) position on the list is reached, the cursor moves to the top (first) position. Increases the value of the parameter.

Middle button [•] – switches the device on/off, confirms an action and returns to the menu.

The cover of the battery compartment is on the back side of the device. The device can be powered from rechargeable or disposable AAA batteries.

On the bottom of the battery compartment there is a SOEKS trade mark with the make of the board.

On the right side of the device, there is a mini-USB connector which can be used to connect the device to a PC with Soeks Device Manager software using a USB to mini-USB cable, or to charge the batteries from a PC or mains power supply.

Setting-Up Procedures

Please read and understand this manual before using the device.

Installing batteries

• When installing batteries pay particular attention to their polarity to avoid damaging the device. Both batteries are installed in this device with positive terminals towards the user.

• When you switch the device off, you can leave the batteries in the device — when the device is switched off, the batteries do not discharge.

• If you are not going to use the device for a long time, please take the batteries out of the device when it is switched off.

Attention!
Do not connect the product to a charger or a PC if it is powered from disposable batteries or has no batteries installed. This can result in the batteries overheating, their damage, electrolyte leakage, a deterioration to the appearance of the device or its damage.

Power control of the device

1. To turn the device on, press and hold the middle button [•] until the display lights up, then release the middle button [•].

2. To turn the device off, press and hold the middle button [•], until the display goes blank. Then release the middle button [•]. If you press and hold the middle button [•] the device will switch off regardless of which mode it is in. The information about the accumulated dose and the history of the measurements will be saved in the device's memory.

Switching the device off through other means, such as allowing the full discharge of batteries or after their removal, is not recommended since data may be lost as a result.

Buttons block

To lock the keypad, press and hold both left [↗] and right [↘] buttons until the keypad locking symbol appears (Page 32). To unlock the keypad, press and hold both left [↗] and right [↘] buttons buttons until the locking symbol disappears.

While the keypad is locked, the device continues measuring radiation background and accumulated dose.

If the keypad is locked and the screen is blank, pressing any button will make the screen turn on for a short time and then go blank again.

Screen indicators

1. Battery charge status indicator:

 - normal power level

 - running down

 - low level of charge — you need to recharge or change the batteries.

 - the batteries are charging

 - the batteries are fully charged

Attention! When the charge level is critically low and the device has switched off, malfunction or loss of measured data are possible and settings may be lost. Therefore, if the indicator is red, immediately connect the device to the charger or change the batteries.

2. Keyboard lock indicator

 - keyboard is locked.

3. PC connection indicator

 - the device is connected to «Soeks Device Manager» software

4. Bar graph

The bar graph shows the mean radiation activity value for the last minute. The graph moves constantly from right to left, the size of the bar representing the level of the background radiation. The bars can be green, yellow or red depending on how seriously the preset background radiation threshold is exceeded.

5. Clock

The clock shows the current time in 24-hour format.

6. Hint line

The hint line presents names and symbols for functions of the corresponding control buttons.

- - scroll the list up
- - scroll the list down
- OK - confirm the action
- Меню - return to the menu
- - decrease the value
- + - increase the value

7. The current (highlighted) line is white.

8. When the element is selected, the line turns blue, with the functions of the control buttons changing to «-» (decrease) and «+» (increase).

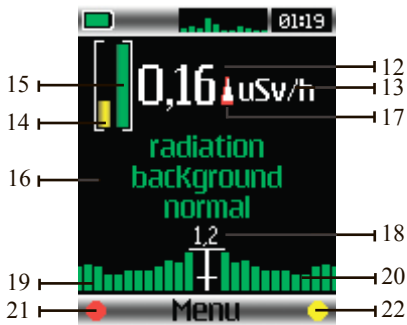
9. The current parameter value is chosen using the center button and is indicated by the middle button [•].

10. To choose a parameter, check it with the middle button [•].

11. To return to the previous menu item, choose «Exit».

Indicators in «Measurement» mode

In «Measurement mode» the following symbols appear on the screen:



12. Radioactivity level. The radioactivity level is shown with large figures in the center of the screen. When the device is taking measurements for the first time, the word «Measurement» appears on the screen.

13. Units: µSv/h

14. Measurement results ready indicator: fills in less than 10 seconds. If the background radiation level is high, it may take considerably less time.

15. Accuracy indicator: fills in with green the better the accuracy is. With each subsequent measurement (10 seconds) the bar in the indicator field grows until it fills all the area, which takes less than 2 minutes (12 measurements). If during the process sharp changes in the background are detected (more than a 3-fold increase, or more than a 10-fold decrease), the accuracy indicator is set to zero. This allows detecting sharp changes in the background levels and displaying reliable values in less than 10–20 seconds.

16. A message about the state of the background radiation based on russian radiation safety standards NRB - 99/2009.

- If the measured background radiation is less than 0.4 μSv/h, a green message «radiation background normal» appears.
- If the measured background radiation is 0.4–1.2 μSv/h, a yellow message «radiation background high» appears.
- If the measured background radiation is more than 1.2 μSv/h, a red message «radiation background dangerous» appears.

17. Indicators of changes in the background radiation:
- one red arrow pointing upwards appears if background radiation higher than 30% of the average value is detected;
- one green arrow pointing downwards appears if background radiation lower than 30% of the average value is detected;
- two red arrows pointing upwards appear when the background radiation is significantly higher;
- two green arrows pointing downwards appear when the background radiation is significantly lower.

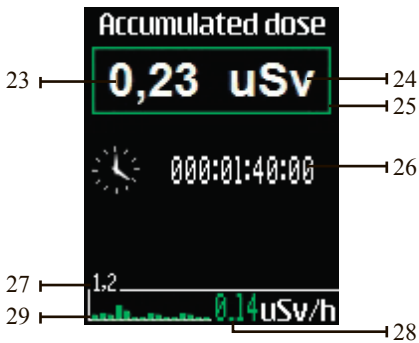
18. Preset background radiation threshold.

19-20. Bar graphs showing last minute radioactivity data from the left and right detectors correspondingly. The graphs are constantly moving towards the center, the size of the bar representing the level of the background radiation. The bars can be green, yellow or red depending on how seriously the preset background radiation threshold is exceeded.

21-22. Indicator of radioactive particle detection for the left and right detector correspondingly. If there are many particles, the indicator is red, if there are only a few, the indicator is yellow.

Indicators in «Accumulated dose» mode

In «Accumulated dose» mode the following symbols appear on the screen:



23. Value of the accumulated dose.

24. Units: μSv/h.

25. Frame-indicator of acceptable accumulated dose level excess. If exceeded frame-indicator becomes red and starts blinking.

26. Total duration of accumulated dose measurement in the following format: ddd:hhhhh:mm:ss (days:hours:minutes:seconds)

27. Preset background radiation threshold.

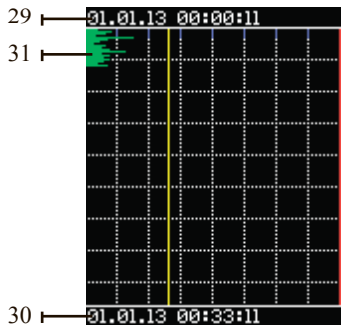
28. Current value of the background radiation.

29. Bar graph showing the mean radioactivity value for the last minute. The graph is constantly moving from right to left, the size of the bar representing the level of background radiation. The bars can be green, yellow or red depending on how seriously the preset background radiation threshold is exceeded.

To return from the «Accumulated Dose» mode to the menu, press the middle button [•].

Indicators in «Data» mode

In «Data» mode the following symbols appear on the screen:



29. Date and time of the beginning of the history.

30. Date and time of the last entry in the history.

31. Bar graph showing mean radioactivity values for the whole measurement period from the moment the device was put into operation or from the moment the accumulated dose was reset. The graph is constantly moving downwards, the length of the horizontal bar representing the level of the background radiation. The bars can be green, yellow or red depending on how seriously the preset background radiation threshold is exceeded.

To scroll the bar graph up, press the left button [↗] to scroll it down, press the right button [↘].

To return from the «Data» mode to the menu, press the middle button [•].

Individual Settings

Before making any measurements it is recommended to customize the settings of your device.

● **Time/alarm clock**

● **Date/Time** - set the current date and time before using the device. This is necessary to save the measurement history, display current time and use the «Alarm Clock» function. Date and time are not reset even when the batteries have been removed.

● **Alarm clock** - check this option to activate the «Alarm Clock» function and set the time. The alarm clock will go off even if the device is turned off. If the sound has been turned off, only the color indication of the clock will appear. You can switch the signal off pressing any button.

Elements of the «Settings» menu

● **Language**

This item allows you to choose the display language.

● **Radioactivity**

Choose the necessary threshold from 16 preset values on the list.

µSv/h.
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
1.2
1.5
2.0
5.0
10.0
30.0
60.0
100.0

When the preset background radiation threshold is exceeded, an intermittent sound alarm is activated and the bars on the graphs turn yellow and red depending on how seriously the threshold is exceeded

You can switch the sound alarm off in:
«Settings» - «Sound» - «Threshold»

● **Radiation dose**

Choose the necessary threshold from 15 preset values on the list.

0.01 mSv
0.05 mSv
0.1 mSv
0.5 mSv
1.0 mSv
5.0 mSv
10.0 mSv
50.0 mSv
0.1 Sv
0.5 Sv
1.0 Sv
5.0 Sv
10.0 Sv
50.0 Sv
100.0 Sv

When the preset accumulated dose threshold is exceeded the sound alarm is activated.

● **Sound**

You can set the sound parameters in this menu item.

● **Enable** - uncheck this option to turn off all possible sounds on the device.

● **Volume** - set the volume for all possible sounds on the device on the scale from 1 to 5.

● **Tone** - choose one of three tones for all possible sounds on the device.

● **Buttons** - uncheck this option to turn off the signal when buttons are pressed.

● **Sensor** - uncheck this option to turn off the signal when detectors register radioactive particles.

● **Threshold**- uncheck this option to turn off the sound alarm when the preset background radiation thresholds are exceeded.

To save power and increase battery life we recommend that you turn off the sound.

● **Screen**

In this menu item you can set the screen properties: brightness and the duration the display remains lit.

● **Bridhtness** - set the brightness of the screen from 1 to 10.

● **Screen Off** - set the interval during which the display remains lit if no button is pressed. Possible values — 1 to 10 minutes.

«00» – the display remains lit all the time the device is on.

To save power and increase battery life, we recommend you set low brightness levels and shorter intervals of inactivity.

● **Power**

● **Auto power off** - set the interval from 1 to 60 minutes after which the device switches off automatically.

«00» – the device remains on until you turn it off with the middle button [•].

● **Data**

● **On time** - each measurement, approximately once every 10 seconds, is recorded. In this case you can save more detailed information in the memory of the device but only for about 24 hours.

● **On change** - only changes in the background radiation are registered. In this case the memory of the device can store data for more than a month of registration.

When you toggle between the parameters, the stored data are not reset; the recording continues in the new mode.

Measurements

After turning on, the device starts registering the radioactive environment automatically. About 10 seconds later, the first result is displayed and a new measurement cycle begins. The device continues taking measurements until it is turned off, regardless of which mode is used. The device gives the most accurate results when the accuracy indicator is completely filled (Page 34, p. 15).

Measuring background radiation of objects

To measure background radiation of food, construction materials and other objects proceed as follows:

1. Measure background radiation level at a distance of a few meters from the object.

2. Bring the perforated side of the device close to the object and measure the background radiation at a minimum distance from the object.

3. Compare the reading with the natural background radiation level you registered in Step 1. The difference of the two readings is the additional background radiation from the object.

To assess radioactive pollution of liquids, the measurements are taken above the open surface of the liquid. To prevent liquid from getting on or inside the device, we recommend you to wrap the device in a plastic bag, but only in one layer.

Measuring accumulated dose

Measuring accumulated dose begins at the moment the device is turned on and continues until the device is turned off, regardless of which mode is used. The next time the device is turned on, the measurement of the accumulated dose will continue. The data can only be reset using a PC with «Soeks Device Manager» software.

Saving the measured data

The device starts saving data from the moment it takes the very first measurement and saves them continuously until the memory is full. When the memory is full, no more data can be saved. Saved measurement data can be transferred on your PC for further review.

History parameters can be set in the Settings menu (Page 38).

More detailed measurement history information can be obtained in «Soeks Device Manager» software if you connect your device to a PC.

Software Recovery

When absolutely necessary, you can hard reset the software of the device and restore the factory settings but all your data will be lost.

To hard reset, hold both the left [↗] and right [↘], buttons and press the middle button [•].

Chose the necessary option on the screen:

«Repair firmware» - not intended for the user! This option is only intended for service center personnel.

«Repair all» - choose to hard reset the device. After the boot indicator has filled up and disappeared, chose «Exit». The screen will go blank and you can switch the device off.

«Exit» - choose to exit the reset mode without making changes.

Marking and sealing

The name of the device is written on the case. The serial number and date of manufacturing are written in the battery section under the accumulator. The manufacturer does not seal the device.

Package

The package ensures safety of the device during transportation and storage, provided normal climatic conditions.

Transportation and storage

The packed device can by shipped by any type of transport over any distance.

During shipment, the device must be protected against humidity.

Shipping conditions of the packed device must meet the following requirements:

- environment temperatures from -40° to +60°C.
- relative humidity max 90% at +25°C.

Until operation, the device must be stored in the factory package, in a warehouse with air temperatures from -5° to +40° C and maximum relative air humidity 80% (at temperature +25°C). The device may not be stored without the package. If the device remained at below-zero temperatures for a long time, it must be left indoors for 2 hours before use.

Maintenance

Maintenance includes:

- removal of dust from the outer surface of the device;
- timely changing or charging the power elements;
- if the device is not used for a long time (more than 2 weeks), power elements must be uninstalled;
- clean the display with soft cloth only.

Prevent foreign objects from getting inside the device through the accumulator section or perforation on the back side of the device.