SOEKS

ИМПУЛЬС

индикатор электромагнитного поля

Сертификат соответствия/ Conformity Sertificate

СИСТЕМА СЕРТИФИКАЦИИ ГОСТ Р

ФЕДЕРАЛЬНОЕ АГЕНТСТВО ПО ТЕХНИЧЕСКОМУ РЕГУЛИРОВАНИЮ И МЕТРОЛОГИИ

СЕРТИФИКАТ СООТВЕТСТВИЯ

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[illegible], Санкт-Петербург, [illegible]

Тел.: [illegible] Тел./Факс: [illegible]

ПРОДУКЦИЯ

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ИЗГОТОВИТЕЛЬ

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ДОПОЛНИТЕЛЬНАЯ ИНФОРМАЦИЯ

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[illegible] ГОСТ Р [illegible]

[illegible]

Руководитель органа [illegible]

Эксперт [illegible]

Сертификат не применяется при обязательной сертификации

Сертификат ISO 9001/ ISO 9001 Sertificate

Voluntary Certification System
«Unitary Standard»

Registered in the Federal agency for technical regulations and metrology
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Governing body of the System
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Bldg.7/9, Bolshaya st., Moscow

Certification authority
Quality Management in Accordance With International Standards, LLC
Bldg.7/9, Bolshaya st., Moscow, 125284, tel.: +7 (495) 646-11-17

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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)

This Certificate obliges the organization to maintain the quality of the works performed by it according to the requirements of the above regulatory document, and this will be monitored by the Certification Authority of the Voluntary Certification System "Unitary Standard" and confirmed at annual inspections.

This Certificate is issued based on the resolution of the expert committee
№ ЕС.С.О.02.01.000777-12 dated 07.03.2012

Registration date: 07.03.2012 Valid before: 07.03.2015

Head of the Certification Authority Fisova N.A.

Chairman of the Committee Artemov D.A.

0051441

Electromagnetic field intensity indicator «Impulse»

Purpose

Electromagnetic field (EMF) intensity indicator «Impulse», hereinafter referred to as device or instrument, is intended for:

• Express analysis of electromagnetic fields in the living space, in residential area and from PC;

• Detection of electromagnetic radiation sources;

• Localization of hidden electric wiring (in the walls, furniture, etc.);

• Search for the most favorable areas for a long stay for people and animals.

During the measurement of electromagnetic field in the the living space, in residential area and from PC the threshold levels for audible alarm and display of information messages are automatically set in compliance with the regulations: SanPiN 2.1.2.1002-00, paragraph 6.4.2.; SanPiN 2.2.2/2.4.1340-03, paragraph 7.1.; SN 2971-84, paragraph 3.1.; GN 2.1.8/2.2.4.2262-07.

The measurement is carried out along two orthogonal axes (X, Y) for the electric field and along three axes (X, Y, Z) for magnetic field.

Base kit

Indicator «Impulse» has the following items included in the base kit:

Indicator «Impulse»	1 pcs
Passport	1 pcs
Batteries (AAA size)	2 pcs
Rigid paperboard box	1 pcs

Battery charger, power cord, rechargeable batteries and other accessories and supplies are purchased separately.

The manufacturer reserves the right to add new features to the device. Please follow new code modifications on the official website: **www.soeks.ru**. The device's code can be modified only in the manufacturer's service centers.

Specification

Table 1

Measurable electromagnetic field frequency range, Hz	from 20 to 2 000
Measurement range of magnetic field (magnetic induction) intensity amplitude along X, Y, Z axes, A/m (uT)	from 0,04 to 12* (from 0,05 to 15*)
Measurement range of magnetic field (magnetic induction) intensity mean square value, A/m (uT)	from 0,08 to 20* (from 0,10 to 25*)
Maximum permissible relative error of measurement of magnetic field intensity, %	±30
Hardware nonlinearity of measurement of magnetic field intensity in the measurement range for test magnetic field of 50 Hz in frequency, not more than, %	7,0
Measurement range of electric field intensity amplitude along X, Y, Z axes, V/m	from 10 to 1000*
Measurement range of electric field intensity mean square value, V/m	from 17 to 1700*
Maximum permissible relative error of measurement of electric field intensity, %	±30
Hardware nonlinearity of measurement of electric field intensity in the measurement range for test magnetic field of 50 Hz in frequency, not more than, %	4,0

Comment:

* - not less than specified parameter value

Measurement rate, samples per second	2
Range of supply voltage of battery or accumulator, V	1,8 - 3,3
USB supply voltage, V	4,6 - 5,5
USB consumption current, not more than, mA	300
Accumulator charging current, not more than, mA	200
Time of continuous work of the device, hours at least	10
Overall dimensions height x width x thickness, max, mm	105x48x19
Weight (without power elements), max, grams	60
Display	Color TFT, 128x160
Operating temperature range, °C	from -20 to +45

Operating conditions

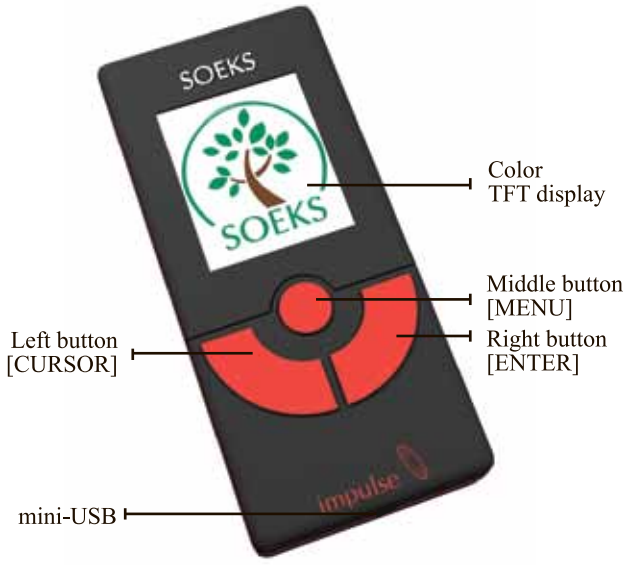
The indicator is operated under normal climatic conditions:
- Ambient temperature, °C: –20 to +45
- Relative humidity, %: 30 to 85

Precautions

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

• Protect the instrument from heavy shocks and other mechanical effects.
• Do not use the instrument at elevated humidity and under the water, keep it away from water: the instrument is not watertight. In case of water ingress on the instrument body or inside it, the indicator should be entirely dried up in a dry room.
• Avoid exposure of the device to the intensive sunlight or high temperature, as it may lead to the electrolyte leakage from the batteries, instrument failure, and injury.
• It is prohibited to store or use the instrument on the heating batteries or under the exposure of other heating systems, as it may lead to the instrument damage or deformation of its case.
• Do not leave the product near devices which generate strong magnetic fields, e. g. magnets and electric motors, as well as in the places, where strong electromagnetic signals are emitted, e. g. near radio transmission towers, for a long time.
• Do not disassemble the device and do not attempt to repair it yourself.
• Strictly observe polarity when you install batteries. The device may fail otherwise.

Appearance of the Device



Controls

Left button [CURSOR]- scroll down the list. After you reach the lowest (last) position on the list you return to the topmost (first) position. Keyboard lock/unlock

Right button [ENTER]- confirm selection, function [NEXT] - shift to another mode.

Middle button [MENU] – turn the device on/of, shift to “Measure” mode from the top menu, return to root menu.

Power

At the back side of the device there is the cover of the battery section. NiMH accumulators or AAA (LR03) type batteries can be used to power the instrument. Two identical batteries should be installed in the instrument at a time.

The bottom of the battery section shows the manufacturer's trademark - SOEKS - and board model.

The front side of the device has a mini-USB port that can be used to recharge batteries from a computer via a USB-mini-USB cable or from the power mains. If connected to a PC or electric mains, the device can work without power elements.

How to install power elements

• In order to avoid instrument breakage, strictly observe polarity when you install batteries.
• Make sure, that battery type correspond to the parameter settings in the "Power" section (page 36)
• When the device is turned off, you can leave the power elements installed – the batteries and accumulators are not spent if the device is in standby mode.
• If you expect not to use the device for a long time, it is recommended to remove the power elements after the device is turned off.

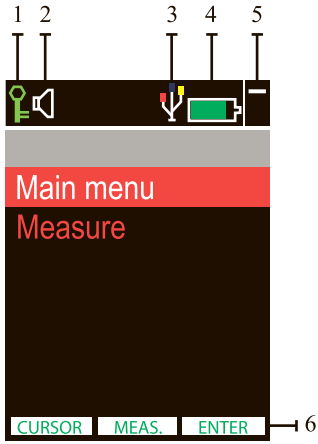
External charger usage

When using accumulators, they can be recharged by means of external charger (EC). Any standard power adapter with the output voltage of 5 V +/- 10 % providing the output current of 500 mA through MiniUSB-B connector can be used as a charger.

Upon connection of the charger the instrument is switched on automatically; screen illumination remains switched on permanently; measurement accuracy decreases, and therefore only "View" measurement mode is available; a switched on instrument cannot be switched off neither by button nor automatically.

When connected to a charger, the accumulators are recharged automatically.

Screen indicators



1. Keyboard lock indicator

- keyboard is active

- keyboard is locked. Indicator is flashing.

2. Sound indicator

- sound is on

- sound is off because of the low battery

- sound is off

3. USB indicator

- USB cable connected

- batteries are charging

- charging completed

4. Battery charge status indicator:

- normal power level

- running down

- low power level

- replace or recharge the batteries A signal indicating the necessity of accumulator charging or battery replacement. Instrument sounds are turned off automatically for the purpose of power saving. Measurement results cannot be considered reliable. Saving of settings is not available.

5. Active status indicator

The continuously moving element in the upper right corner of the screen indicates the device's active status.

When buttons are pressed, icons in this area show which button has been pressed.

 - the [CURSOR] button was pressed

 - the [ENTER] button was pressed

 - the [MENU] button was pressed

6. Help line

Contains the names of the functions of control buttons

CURSOR - move down the list

MENU - return to the main menu

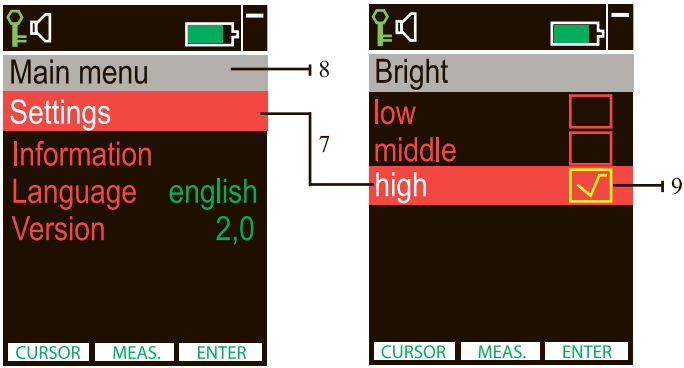
ENTER - confirm the selection

MEAS. - shift to "Measure" mode

NEXT - shift to another mode

UNLOCK - unlock the keyboard

Menu indication and navigation

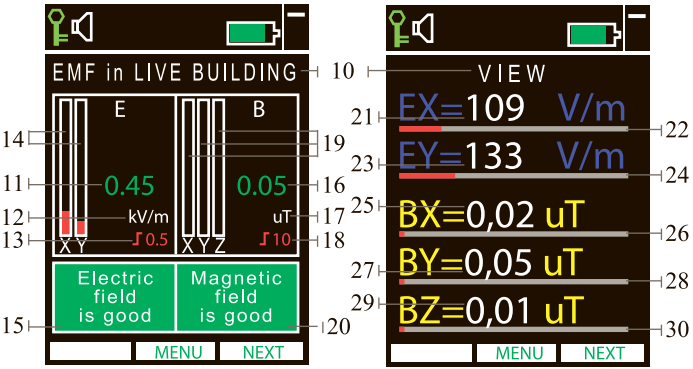


7. The current (selected) line is highlighted with red color.

8. Inside a selected menu item, the upper line on the list indicates the parent menu item.

9. As the device is being set up, the current parameter value is flagged with a tick mark.

Indicators in the «Measure» mode



10. Current measurement mode

● In "EMF in LIVE BUILDING", "EMF in LIVE AREA", and "EMF of PC" modes;

11. RMS value of electric field intensity along X and Y axes.*
12. Electric field measurement units: kV/m (kilovolts per meter).
13. Electric field intensity threshold for audible, color and text warning triggering (it is set according to the active norms)
14. Graphic columns for display of instant electric field values along X and Y axes.
15. Information message about electric field level, according to the active norms.
- In case when the measurement result does not exceed the set threshold, an "Electric field is good" message appears on the green background.
- In case when the measurement result exceeds the set threshold, an "HIGH LEVEL OF ELECTRIC FIELD" message appears on the red background.
16. RMS value of magnetic field intensity along X, Y and Z axes.

Note:
* - more detailed information about axes arrangement see on the page 38

17. Magnetic field measurement units: uT (microtesla).
18. Magnetic field intensity threshold for audible, color and text warning triggering (it is set according to the active norms)
119. Graphic columns for display of instant magnetic field values along X, Y and Z axes.
20. Information message about magnetic field level, according to the active norms.
- In case when the measurement result does not exceed the set threshold, a "Magnetic field is good" message appears on the green background.
- In case when the measurement result exceeds the set threshold, an "HIGH LEVEL OF MAGNETIC FIELD" message appears on the red background.

● **In the "View" mode**

21. Electric field intensity value along X axis. Measurement unit: V/m (volts per meter)
22. Graphic scale for output of electric field intensity value along X axis.
23. Electric field intensity value along Y axis. Measurement unit: V/m (volts per meter)
24. Graphic scale for output of electric field intensity value along Y axis.
25. Magnetic field intensity value along X axis. Measurement unit: uT (microtesla)
26. Graphic scale for output of magnetic field intensity value along X axis.
27. Magnetic field intensity value along Y axis. Measurement unit: uT (microtesla)
28. Graphic scale for output of magnetic field intensity value along Y axis.
29. Magnetic field intensity value along Z axis. Measurement unit: uT (microtesla)
30. Graphic scale for output of magnetic field intensity value along Z axis.

Menu of the device

The device's menu consists of 2 items:
- Main menu – device settings
- Measure – measurement of EMF level

Main menu
Settings

In this section you can preset the parameters for the device.
Items of the Settings menu:

● Vision
In this section you can adjust screen settings: brightness and display time.
●Brightness
Select low, medium or high brightness level of the screen.
To save power and help the batteries last longer it is recommended to use the low or medium brightness level of the screen.
● OffTime, min.
Set the time of display backlight in standby mode. You can select from 1 to 15 minutes in the options list.
no – backlight is always on while the device is in use.

● Sound
In this section you can adjust the sound parameters.
● Enable (yes/no) — all instrument sounds
● KeyPad (yes/no) - button sound
● Alarm (yes/no) - audible alarm on standard threshold crossing.
For the purpose of power saving and extending battery lifetime it is recommended to mute sounds.
● Tone
Select one of the 4 available sound tones.
● Volume (low/middle/high)
Default is the average volume.

● **Power**

In this item you can adjust parameters of the power elements used in the device.

● Accumulators

Select ‘yes’ if the device has rechargeable accumulators installed and ‘no’ if regular batteries are used. Incorrectly selected parameter of the installed power supply type may cause incorrect indication of power charge.

If ‘yes’ parameter is selected the accumulators will recharge while connected to a PC or charger via a mini-USB slot.

● OffTime, min.

Set the time in minutes after which the device shall automatically shut down. no – the device will work until turned off with the [MENU] button.

Language

In this section you can select the interface language. This device has only 2 options: Russian and English.

Attention! After the [MENU] button is pressed the screen will display the root menu in the selected language. If you made an error and selected the unfamiliar language, press the following sequence of buttons to return from the ‘Main menu’ to the language selection menu: **right-left-left-right.** Then select the language you need and confirm your choice with right button.

Measure

The instrument can operate in one of four electromagnetic field level measurement modes:

- EMF in LIVE BUILDING
- EMF in LIVE AREA
- EMF of PC
- View

"EMF in LIVE BUILDING", "EMF in LIVE AREA", and "EMF of PC" modes have preset thresholds for audible, color and text warning triggering according to the norms (Table 2).

Table 2

Mode	Electric field threshold, V/m	Magnetic field threshold, uT	Averaging degree
EMF in LIVE BUILDING	500	10	10
EMF in LIVE AREA	1000	25	10
EMF of PC	25	0,25	40
View	no	no	40

When the threshold limit is exceeded, a corresponding message is displayed on the red background and an interrupted alarm sounds. The signal can be enabled or disabled by the "Alarm" parameter setting

[Main menu] - [Settings] - [Sound] - [Alarm]

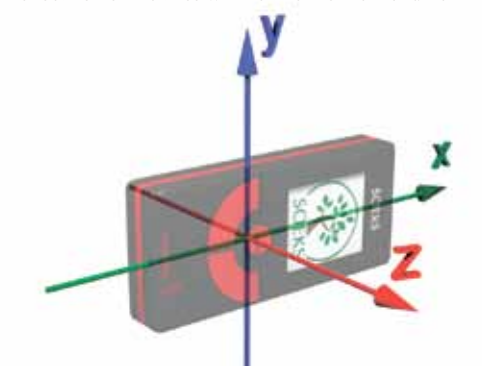
The average measurement time is 500 ms. Measurement data are averaged (averaging degree for each measurement mode is specified in the Table 2). A root-mean-square value of all values along measurement axes is displayed as an electric and magnetic field intensity. An instant value for each measurement along each axis is also displayed in a form of graphic column (page 33).

A limit of column filling in different modes is specified in the Table 3:

Table 3

Mode	Electric field column limit, V/m	Magnetic field column limit, uT
EMF in LIVE BUILDING	2000	25
EMF in LIVE AREA	5000	50
EMF of PC	50	500
View	3300	29-46

The instrument is equipped with two antenna sensors for measurement of electric field along X and Y axis and with three sensors for magnetic field measurements along X, Y, and Z axes. The axes correspond to the axes of three-dimensional orthogonal coordinate system. The figure displays the location of the axes with relation to the instrument image.



During the source search it is essential to analyze the instant values along individual axes for the purpose of source direction identification.

The switching between modes is performed circle-wise by pressing the right button, [NEXT].

Power control of the device

● In order to **turn on** the instrument, you should press and hold the [MENU] button until the display switches on, release button after that.

- On the instrument switching on an animated intro with company logo appears. To skip intro press the [SELECT] button. The instrument model is displayed for 3 seconds after the intro.
- If the instrument display flashes for a short moment but the instrument doesn't turn on during the [MENU] button hold, it is necessary to replace batteries or recharge accumulators.
- When turned on, the instrument automatically enters "EMF in LIVE BUILDING" measurement mode.

● In order to **turn off** the instrument, you should press and hold the [MENU] button until the animated picture with falling autumn leaves appears. Release the [MENU] button thereafter. Whichever measuring mode is active, pressing and holding the [MENU] button results in the instrument switching off.

If the keyboard is locked, in order to turn the instrument off it is necessary to unlock the keyboard at first and press and hold the [MENU] button then.

● Upon the instrument connection to the charger, the instrument is switched on automatically regardless of type and state of batteries, even if they are absent.

If the batteries are absent and the charger is connected, momentary display illumination miss may occur. This mode is not recommended for carrying out of measurements.

If a charger is connected, the instrument does not turn off (even upon the [MENU] button holding) until the charger is disconnected.

Keypad locking

In order to lock the keypad, press and hold left button until the keyboard lock indicator becomes red and starts blinking. In order to unlock the keypad, press and hold left button until the keypad lock indicator becomes green (page 31, article 1).

If the keypad is locked and the display has turned off automatically, then the display turns on for a short moment and goes out again upon pressing of any key.

Instrument operation

1. It is recommended to read this manual carefully.
2. Install batteries (page 30, 36)
3. Switch on the instrument.
4. It is recommended to carry out individual instrument tuning before measurements (page 35)
5. When turned on, the instrument automatically enters "EMF in LIVE BUILDING" measurement mode. The first measuring result appears on the screen approximately in 10 seconds, and then a new measuring cycle starts. The measurement is carried out uninterruptedly until the instrument is switched off regardless of its mode.

In order to obtain the most accurate results, the measurements should be carried out in the following way:

● EMF in LIVE BUILDING

Turn off all home appliances, including local lighting, i. e. table lamps, sconce, etc. Turn off the general illumination.

Put the instrument into the monitored area with upper side pointing toward the wall, holding it with your fingers at arm's length. The measurements shall be taken at a distance of 20 cm from the walls ad windows and at a height of 0.5–1.5 m from the floor level.

Electric field (E) reading is displayed in the left side of the indicator display. If the "HIGH LEVEL OF ELECTRIC FIELD" message appears on the red background, it means that electric field level is increased and reasons for it should be searched for.

Turn on the general illumination then, and take measurements in the same points, however, only excess of magnetic field (B), which is displayed in the right side of the screen, should be analyzed. If the " HIGH LEVEL OF MAGNETIC FIELD" message appears on the red background, it means that magnetic field level is increased and reasons for it should be searched for.

While taking measurements, one should take into account that data is updated approximately every 10 seconds, therefore the result should be read out not earlier then 10 seconds after placement of indicator in the monitored area.

● EMF in LIVE AREA

Set the "EMF in LIVE AREA" mode

Bring the instrument into the monitored area, holding it with your fingers at arm's length at a height of 1–2 meters above the ground or other surface. Keep instrument in the monitored area not less than 10 seconds prior to reading out the result. Measures should be taken in case of appearance of "HIGH LEVEL OF ELECTRIC FIELD" or "HIGH LEVEL OF MAGNETIC FIELD" messages on the red background.

The possible reasons for threshold crossing are: proximity of power cable, wiring defect, proximity to the electric devices (e. g. elevator motors), proximity to the base stations, crossing of the tracks of radio relay stations, proximity to the power lines, etc. Long stay of people and domestic animals in such areas should be avoided; in case of significant excess staying there may result in electrical shock.

● EMF of PC

Set the "EMF of PC" mode

Take measurement according to the procedure specified in Appendix 3.

Measurement time in this case should be not less than 30 seconds. For the purpose of reducing electromagnetic field distortion generated by human, it is advisable to fix the instrument on an electrically neutral stand, e. g. plastic chair, for the time of measurement.

● Localization of hidden electric wiring

The instrument can be used for the localization of a hidden electric wiring in walls or furniture.

To do this, it is convenient to use graphic electric and magnetic field level indicators, displaying not average but instant value of the corresponding field parameter.

Select the required range for instant field level display by an experimentation. If the field is weak, use «EMF of PC» mode; if the signal exceeds the display range, use other modes.

Hold the instrument with your fingers at arm's length 5–10mm away from the wall surface and move it slowly across the investigated area. The instrument should move perpendicular to the path. Control a position with maximal instant values visually by means of the graphic indicators. Cable may go near the middle of the instrument edge in the place of stable maximum.

It is convenient to exercise on an open isolated cable. Try to find electric wiring turning the electrical load on or, vice versa, turning it off.

• If you sleep badly, you are a prey to anxiety, or your blood pressure is be very unsteady, check places where you sleep, work and having a rest for the presence of electromagnetic fields. Identify a spot with the minimal EMF level and place your bed or workplace there.
• Examine the directions of maximal radiation from a microwave oven and try to keep off these zones.

The results obtained by this instrument cannot be used for official reports on the electromagnetic environment, but can be a reason for corresponding services calling and initiation of measurements by means of specialized equipment.

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.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