



АКУСТИК
ACOUSTIC
WATER LEAK DETECTOR

USER'S
MANUAL

ACOUSTIC

v 1.3

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1 FUNCTION

АКУСТИК - detector has been designed to identify the point of water leak by detecting the water leaking sound, which is produced on an underground water pipe, from the ground surface. It is a device to search for leaks in water pipes and other piping systems.

АКУСТИК uses an acoustic signal with a frequency range from 60 to 2400 Hz. Adjustable filter allows you to select the desired signal.

Adjustable filter: Low Range -100, 200, 400 Hz

Hight Range - 600Hz, 800Hz,1200Hz


The АКУСТИК is powered by 4 AA-type batteries.

Leak indication can be done visually (level and spectrum of signal) and with acoustic reception signal (using headphones)

2 INTRODUCTION

Thank you for purchasing the АКУСТИК.

Read the user manual carefully before starting operation. You should act according to the safety rules and recommendations of the user manual, it will help avoid errors during operation.

The sign , points to the safety rules of an operation and important measuring rules, read carefully!

- A «АКУСТИК» MUST BE OPERATED UNDER CONTROL OF SKILLED TECHNICIANS. ACTIONS OF UNSKILLED OPERATOR CAN DAMAGE INSTRUMENTS AND BE DANGEROUS FOR OPERATOR'S HEALTH.
- DO NOT DISASSEMBLE INSTRUMENTS!
- OPERATION IS NOT ALLOWED WHEN: INSTRUMENT IS DEFECTIVE (FULLY OR PARTIALLY), ENCLOSURE OF INSTRUMENT IS DAMAGED (FULLY OR PARTIALLY), MEASURING WIRES ARE DAMAGED (FULLY OR PARTIALLY), AN INSTRUMENT HAS BEEN KEPT IN AGGRESSIVE CONDITIONS



The repairing of instruments must be done only by accredited service centers.

3 ENVIRONMENTAL SPECIFICATION

Operation temperature	-20 ÷ +50°C
Relative air humidity	to 90% at 30°C
Air pressure	86 ÷ 106 kPa

4 SPECIFICATION

Frequency Range without filter	40 - 2400 Hz
Filter, Low Range	100 Hz 200 Hz 400 Hz
Filter, Height Range	600 Hz 800 Hz 1200 Hz
Applicable standard	IP42
Power supply:	4 x Ni-Mh type "AA"
Overall dimensions (without the bag), mm	138x68x187
Weight of the device (including the storage battery, without the bag), kg	0,65

5 SUPPLIED ACCESSORIES

№	Name	Pieces
1.	АКУСТИК	1
2.	Bag for АКУСТИК	1
3.	Acoustic sensor	1
4.	Pillar kit	1
5.	Headphones	1
6.	Charge adapter 12 V	1
7.	User's manual	1
8.	Bag for carrying	1






6 PRINCIPLE OF OPERATION

Highly sensitive microphone perceives sounds propagating in the soil. The received signal enters into the receiving device in the receiver, where analogue and digital processing is carried out. The acoustic signal is reproduced in head-phones. The display shows the spectrum of the received signal.

7 CONTROLS



On the front panel of the detector there are:

1. Graphical display
2. Fader (level controls).
3.  - Low-pass filter mode switch or “increase” in some modes.
4.  - High-pass filter mode switch or “decrease” in some modes.
5.  - Function button in this version is used to switch between modes of printing the information on the display.
6.  - Screen brightness adjusting button.
7.  - Switch on/off button.

8 ACOUSTIC SENSOR

Supplied complete set includes highly sensitive acoustic detector.



DURING TRANSPORTATION AND OPERATION DO NOT EXPOSE THE DETECTOR TO SHOCKS AS IT CAN LEAD TO DAMAGE OF THE SENSOR.

The detector is connected to the socket on the side face of the receiver. When installing the detector on the surface of investigation reduce the volume level as it can damage hearing.

9 PREPARING TO WORK


Carefully unpack the trace-locator and make sure it doesn't have any visible mechanical damages of the case. If the device has been stored at hyper humidity or at low temperatures, wait for 24 hours before starting off.



KEEP OUT OF WATER

The acoustic water leak detector (АКУСТИК) is power supplied by 4-Ni-Mh AA-type batteries with 2-2,3 A/hrs capacity. This provides 13-hour continuous work of the device.

Open the battery compartment locates in the bottom side of the device and insert the batteries in the correct direction by aligning the “+” and “-“ marks on the batteries with the polarity markings inside the battery compartment.





Connect the AC power adaptor to the device and fully charge the batteries. The process of charging is displayed on the LCD. You can't put the device on by the  when being charged.



BEFORE LONG-TIME STORAGE OR TRANSPORTING CHARGE THE BATTERIES TO AVOID THEIR DAMAGE AND TAKE OUT OF THE BATTERY COMPARTMENT

10 USING THE LEAK-DETECTOR

“☀ *Brightness*”

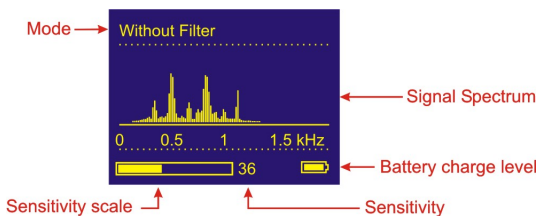
Press  for brightness level changing, set new value by pressing buttons  or . Press  for escape.



Amplification adjustment

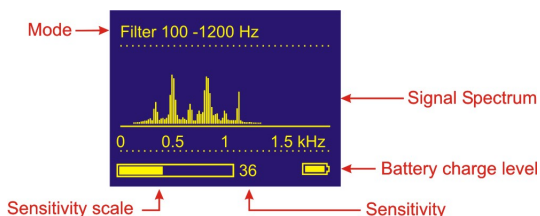
When searching for leaks install a signal level that is sufficient for listening and analyzing leaks. It is possible to adjust the loudness level of head-phones. The levels are determined personally.

Display

After switching on the receiver the display shows splash screen with the name of device and serial number, then a signal spectrum is shown. The bottom line shows the set amplification level and battery charge indicator.



The device has an in-line filter for interference elimination. Press  and  at the same time to switch the filter on/off. The filter parameters are shown in the top line on the display. The figure shows a band-pass filter with a bandwidth of 100 Hz, 1200 Hz.



Modes of displaying information



АКУСТИК enables to display information on the screen in 3 ways:

1. Signal spectrum;
2. The spectrum and maximum value of the signal in top right corner;
3. Instantaneous value and average value of signal



Press **F** to switch between the modes of display.

Filter installation

The receiver has a band-pass filter with adjustable characteristics.

Press the button  to set the necessary cut-off frequency below the range. Press  to set the necessary cut-off frequency above the range.

Filter can be used to eliminate interfering noise.

Filter adjustment is done personally, but if no positive result is gained, it is recommended to switch the filter off by pressing  and  at the same time and make sure that no part of the leak noise spectrum was filtered.

Searching for the leak

The leak searching is carried out along previously marked pipe-line route.

When searching on solid surfaces (asphalt, concrete cover) screw three legs into the bottom surface. When searching on soft, loose grounds screw pin into the centre of bottom surface of the detector.

Connect the detector. Switch the receiver on



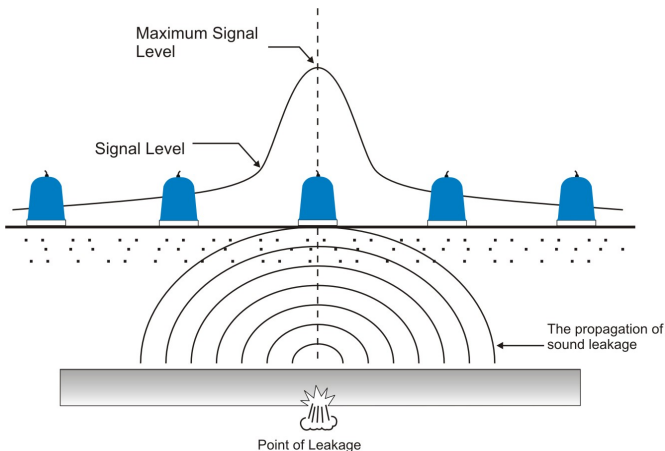
WHEN INSTALLING THE DETECTOR ON GROUND TO AVOID DAMAGING HEARING, DECREASE THE SIGNAL LEVEL USING REGULATOR!

Install the detector on the ground and listen to the signal, move the detector along the route. By watching the received signal spectrum, determine the level and frequency of noises.

If necessary switch the filter on by pressing **F** and set the most appropriate characteristics.

Filter adjustment is done personally, but if no positive result is gained, it is recommended to switch the filter off.

Eventually determine the place with increased signal level.










Main frequencies of leak noises are in the range from 300 to 500 Hz. More low-frequency noises can appear in plastic pipe-lines and in low-pressure pipe-lines.

The following can interfere with leak detection:

- Small size of leakage
- Low pressure in the pipe
- Material of pipe
- Properties of soil (Water saturation of soil)
- Properties of surface (concrete, asphalt)
- Noise from water consumption in houses.
- Drainage system noises
- Car noises
- Industrial noises
- Noises of wind

11 FACTORY MENU

Turn on the device in the factory mode – press  while holding . In this mode the device displays the menu only:

1. **Language English** – Select the menu item and press  for select language.
2. **Brightness** – Select the menu item «Brightness» and press  for brightness level changing, set new value by pressing buttons  or . Press  for escape.

12 SHIPPING and STORAGE

For shipping АКУСТИК must be done carefully packed according to the shipping rules and regulations.



- BEFORE LONG-TIME SHIPPING TO AVOID DAMAGE TAKE THE BATTERIES OUT
- BEFORE LONG-TIME STORAGE THE BATTERIES MUST BE FULLY CHARGED

WARNING! Make sure that the condition in the storage rooms or warehouses satisfy the requirements for storing the devices and doesn't have any dust, aggressive gas, acids or harmful crud that could cause rusting!

13 WARRANTY

Manufacturer guarantees operating capacity of the trace-locator within the warranty period only if all the required operating, storage, shipping conditions are carefully observed.

Warranty period - 12 months from the sale date.

Warranty does not cover the battery and charger.

14 TEST CERTIFICATE

АКУСТИК, S/N _____

satisfies all the technical conditions and admitted and fits for service.

Manufacture Date “ ___ ” _____ 2019

Factory Representative (signature) _____