

Signal-5

Wideband Digital Detector of Electromagnetic Waves

User's Manual

General Description

Wideband Digital Detector of Electromagnetic Waves *Signal-5 version 5.6* (the detector) provides an easy and effective way of detecting different kinds of transmitters.

The detector allows to reveal analog and digital radio-microphones, telephone bugs, video transmitters, etc.

The detector is sensitive to cellular phones of all standards, radiotelephones and radio transceivers.

Features and Operating Modes

- **Easy Search Mode:** detector reacts on interrupted – “digital” signals (GSM, CDMA, DECT, Wi-Fi) and on constant analog FM / WFM audio and video transmitters. Detector emits trill when digital signal is found or long beep when FM / WFM carrier is detected.
- **Normal Mode:** detection of FM and WFM audio and video transmitters. 5 switchable levels of sensitivity.
- **Amplitude Detector (Acoustic Loop):** location of AM and FM-transmitters with AM; determination the type of the transmitter “by ear” (AM, FM, GSM, CDMA, DECT, Wi-Fi).
- **Trembler Mode:** detection of a signal accompanied by vibration. Audio signals switched off.
- **Battery Control:** battery exhaustion notification.
- **Small Size and Weight:** 61x36x14 mm, 30 gram.

Small size and good mimicry will allow you to have *Signal-5* always at hand and immediately check any suspicious side.

Differences from *Signal-5.5*

- Easy Search Mode
- In Trembler Mode the detector reacts on digital signals as well as on constant signals.

Appearance

The detector is implemented inside a case of alarm remote control. **No external antenna is used.**

On the front panel there are two buttons (Big Button, Small Button) and a two-colour LED (red/green).

On the back side there is a screw (See *Changing Battery*).

Appearance of the detector is shown on the photo.



Elements of Control and Indication

Big Button

Long press switches the detector on/off (see *Switching On/Off*).

Short press in Normal Mode increases level of sensitivity (see *Sensitivity Adjustment*).

Small Button

Long press switches the detector between Normal Mode and Easy Search Mode.

Short press in Normal Mode decreases sensitivity (see *Sensitivity Adjustment*).

Short press in Easy Search or Trembler Mode switches the detector into Amplitude Detector Mode.

LED

Glowes green when the detector is on.
Blinks red when some signal is detected. Period of blinking (7 gradations) depends on the strength of the signal. Blinking of the LED may be accompanied by an audio signal or by vibration.

Switching On / Off

Switching On

Press and hold Big Button. In 1 second the detector will switch on.

Depending on the previous settings the detector goes either into Easy Search, Normal or Trembler modes.

Trill says that the detector is switched into Easy Search Mode (default factory setting), long beep indicates that the detector is switched into Normal Mode.
Vibration without sound indicates Trembler Mode.

If battery voltage goes below certain level, the LED flashes red and 3 short beeps are emitted.

After each switching on, level of sensitivity in Normal Mode is set in the middle position (3rd level).

Switching Off

Press and hold Big Button. In 1 second the detector will switch off. Short beep and LED flash confirm switching off.

Automatic Switching Off

After 30 minutes of work the detector automatically switches off. Short beep and LED flash confirm switching off. This function prevents the battery from complete discharge in case you forgot to switch the detector off.

Easy Search Mode

Easy Search Mode is default mode in factory settings.

Trill sound when the detector is turned on, indicates Easy Search Mode. To switch into this mode from Normal Mode, press and hold Small Button until trill is emitted.

In this mode the detector does time analysis of the signal received and according to the data obtained emits one of the following signals:

- **Trill** – in case of some interrupted, presumably digital signal (GSM, DECT, WLAN, Bluetooth, etc).
- **Long Beep** – in case of a constant signal of some audio or video FM (WFM) transmitter.

Please note, that when some FM (WFM) signal is being received on the edge of sensitivity, it can be erroneously identified as digital. Opposite situation, when digital signal is detected as FM signal, is unlikely.

Thus, one should pay especial attention to the places, where detector steadily emits long beeps. This indicates presence of some FM (WFM) carrier, which might be a signal of some analogue audio or video surveillance transmitter.

Easy Search Mode (continued)

Sensitivity adjustment in Easy Search Mode is not used.

To locate FM (WFM) transmitter, switch the detector into Normal Mode.

To switch the detector into Normal Mode, press and hold Small Button until the long beep.

To switch from Easy Search Mode into Amplitude Detector Mode, shortly press Small Button.

To switch the detector into Trembler Mode, press and hold both buttons until vibration.

Normal Mode

Normal Mode is used for search and **location** of analogue audio and video transmitters with FM (WFM) modulation.

To switch into Normal Mode from Easy Search Mode, press and hold Small Button until long beep is emitted.

For preliminary estimation of FM transmitters presence, Easy Search Mode is recommended.

Transmitters Search

Turn the detector on and, if needed, switch it into Normal Mode. Select the maximum sensitivity.

Slowly circle a room, approaching the detector to suspicious places, where bugs may be planted. If in some place the detector starts intensively blinking, decrease sensitivity and proceed the search. Intensive blinking at minimum sensitivity tells about proximity of some transmitter.

Please notice, that when a transmitter is working indoor, complicated interference pattern appears, where maximums of electromagnetic field alternate with minimums. Thus, a situation, where the level of signal decreases while you are getting closer to the transmitter, is possible.

Looking for bugs, you should remember that the detector may react on any transmitter, which can be your cellular or radiotelephone. If there is a TV-tower or cellular base station in your neighbourhood, the level of signal may be enough to make the detector react. In this case you should decrease the level of sensitivity.

Normal Mode (continued)

Sensitivity Adjustment

In Normal Mode the detector has 5 levels of sensitivity. Level "1" corresponds to the lowest sensitivity, level "5" – to the highest. At switch on, sensitivity is set in the middle position – level "3".

To increase sensitivity briefly press Big Button.
To decrease sensitivity briefly press Small Button.

Change of sensitivity is confirmed by a short audio signal. Please notice, that the detector beeps not in the moment the button is pressed but immediately after its release.

Attempt to set sensitivity higher than 5 or lower than 1 leads to error beep – 3 short beeps.

Setting middle sensitivity (level 3) is confirmed by a double beep.

Average detection distance for different devices (no interference, maximum level of sensitivity):

- Transmitter (bug) 5 mW 400MHz FM: 1 – 2 m.
- Transmitter (bug) 25 mW 400MHz FM: 3 – 4 m.
- GSM cellular phone (detector in Easy Search Mode): 2 – 8 m.
- DECT phone / base block (detector in Easy Search Mode): 1 – 1,5 m.
- CDMA-800 cellular phone (detector in Easy Search Mode): 0,2 m.
- Bluetooth class A (detector in Easy Search Mode): 0,3 – 0,5 m.

Trembler Mode

To turn into this mode from Easy Search or Normal Mode, press and hold both buttons. In 3 seconds the detector vibrate and goes into Trembler Mode.

In this mode the detector reacts on both interrupted ("digital") and constant (FM / WFM) signals.

Sensitivity adjustment in Trembler Mode is not implemented.

To switch from Trembler Mode into Amplitude Detector Mode, briefly press Small Button. To switch back into Trembler Mode, briefly press Small Button again.

To switch back into Easy Search or Normal Mode, press and hold Small Button until long beep or trill.

Amplitude Detector Mode (Acoustic Loop)

This mode can be switched on from Easy Search or Trembler Mode by short press of Small Button.

When amplitude detector is on, some noise from internal speaker should be heard.

To switch Amplitude Detector Mode off, shortly press Small Button again.

Amplitude detector allows:

To listen to ether (in AM mode) and after some experience distinguish types of signals (GSM, DECT, AM, FM etc.).

To find FM-transmitters with "parasitic" AM by typical whistle.

To learn to distinguish signals "by ear" just listen to signals from the known sources. You will be able to differ GSM from DECT or CDMA and so on.

AM signals are heard "as is". FM signals without "parasitic" AM are silent.

Note, that power consumption in the amplitude detector mode is higher than that in other modes (except Trembler Mode). So, it is not recommended to leave the detector in this mode for long.

Changing Battery

If battery voltage goes below some certain point, the detector, when turned on, emits 3 short beeps.

Please note, that when the battery is discharged below the certain level, sensitivity of the detector may decrease.

To change the battery, twist the screw on the back cover, and disassemble the detector.

ATTENTION !

Observe polarity when installing the battery!

Contact with a prominence must be connected to the minus (-) of the battery.

Contact without a prominence must be connected to the plus (+) of the battery.

Maintenance

To provide faultless work of the detector, observe the following rules:

- Observe polarity when installing the battery.
- Protect the detector from moisture.
If you let the detector fall into water, do not press the buttons. Disassemble the detector, remove the battery and dry the detector.
- Clean the detector with a damp cloth or an anti-static wipe without chemical agents.
- Do not drop the detector.

Technical Data

1. Operating voltage: 12V (type 23A battery).
2. Sleep mode current: 4 μ A.
3. Peak operating current (Normal Mode): 15 mA.
4. Average operating current (Normal Mode): 10 mA.
5. Average operating current (Normal Mode): 10 mA.
6. Working time: 3,5 hours.
7. Frequency range: 20-3000 MHz.
8. Sensitivity (f = 400 MHz): 40 μ V (0.04 mV).
9. Operating temperature: -20°C ... +50°C.
10. Weight with battery: 30g.