

Noise Detector

for ISO11784 transponders reading issues

ND4000



By BioControl

Version: 1.3

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1. General Information

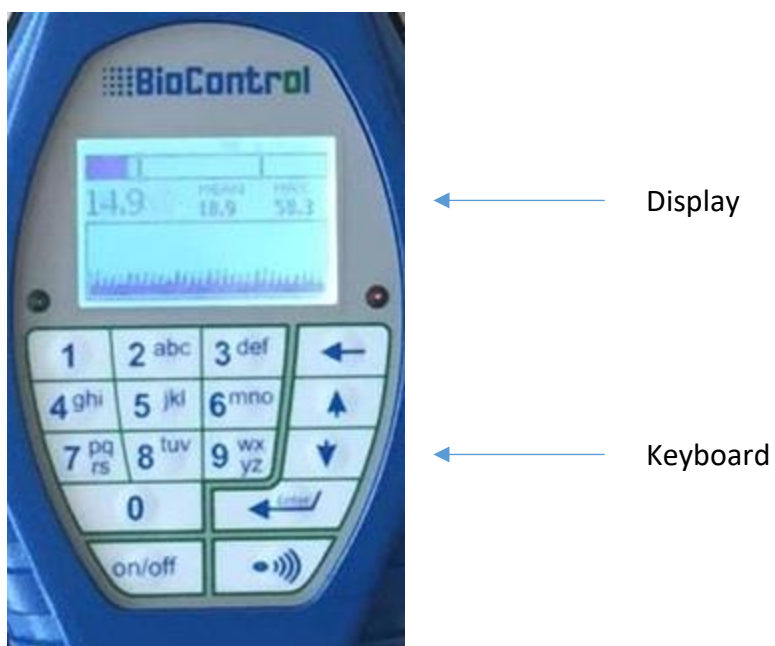
The BioControl Noise Detector indicates the level of noise on frequencies close to 124-134kHz or 98kHz which are the same frequencies used by HDX/FDX/B transponders reading.

The Noise Detector can therefore help detecting noise sources that could disturb the reading of HDX/FDX/B transponders on the farm.

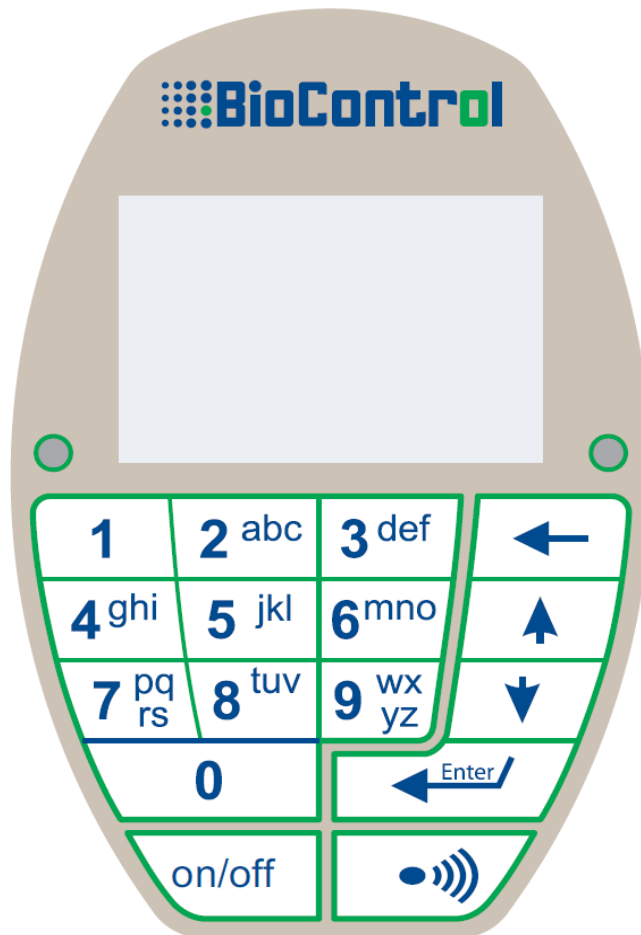
2. Layout of Noise Detector








Display and Keyboard



3. Keyboard navigation



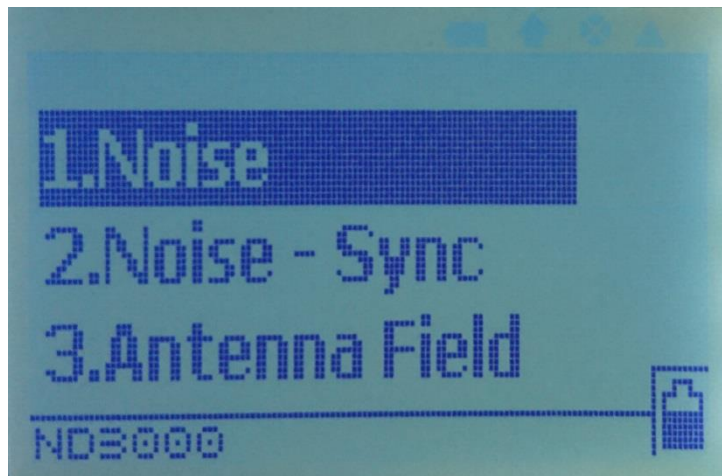
	Read Tags
on/off	Switches the unit On and if held for more than 3 seconds off. It is also used to move back to main menu when reading tags.
	Escape, go to previous menu
	Previous Menu item/field
	Next Menu item/field
	Select
1	The number 1 and special functions of space, (.), (\)

4. Menu

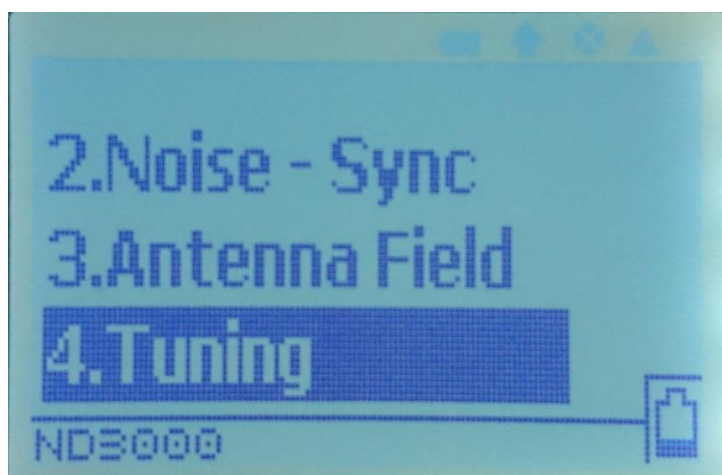
The Noise Detector is measuring filtered signals visible by the reader. It will display information in decibels relative to one microamp per meter (dB μ A/m) about signals (noises) which disturb the reading of tags on frequencies close to 124-134 kHz and 98 kHz in its surroundings. 3 dB increase means two times bigger noise. Click the “on/off” button to turn the Noise Detector on.

Main Menu

Noise detector has 4 menu entries. When Noise detector is launched, you will see the following screen:



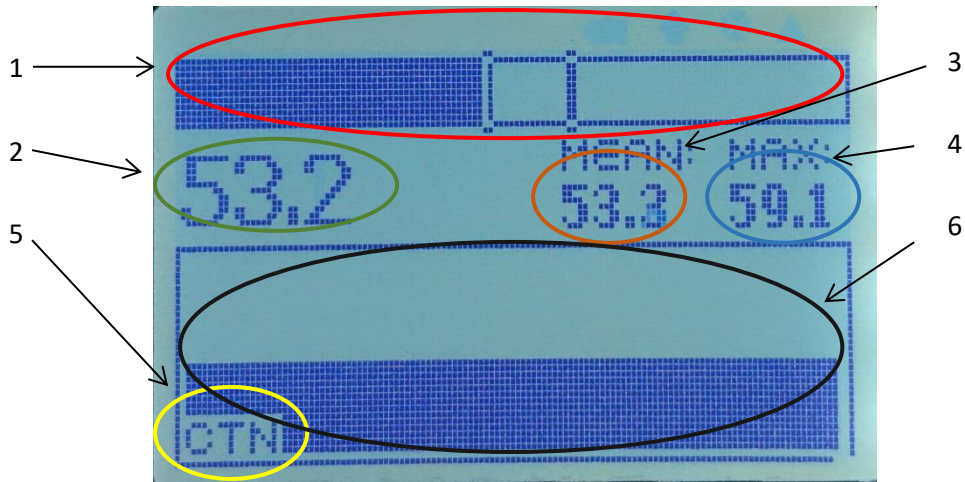
Menu entries 1, 2, 3, device model, battery level



Menu entries 2, 3, 4, device model, battery level

Menu 1 – Noise

Menu 1 is chosen to start measuring noise in order to check if there is anything working in the same frequency as the reader.



Menu 1 – Noise – reading

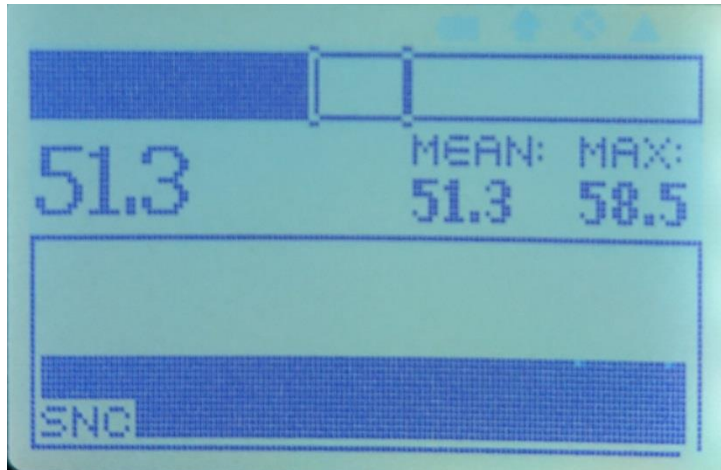
1. Top bar with maximum level as complete bar, and current reading in blue and straight line for mean value.
2. Current noise in (dBµA/m) reading
3. Mean (dBµA/m) measured
4. Maximum (dBµA/m) measured.
5. Menu name shortcut
6. Graph shows readings over the last 12 seconds by the Noise Detector.



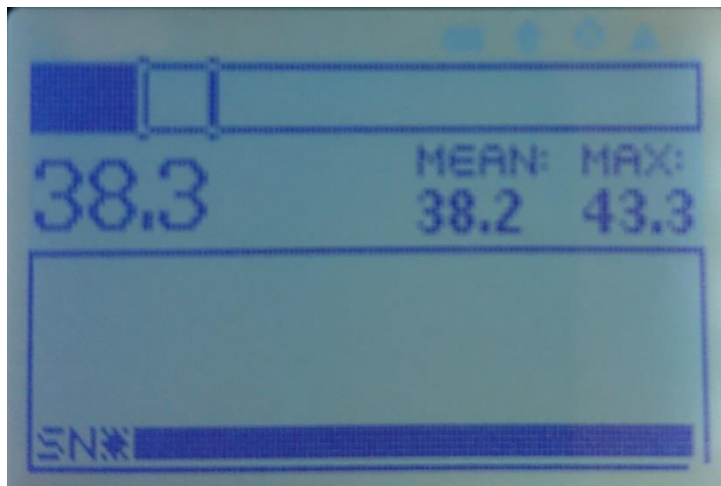
Menu 1- Noise – reading 2

Menu 2 – Noise sync

Menu 2 is used to check for the noise in the presence of several active readers. Noise Detector is synchronized with external antenna field in this mode of operation. When some readers are not synchronized, it is indicated by displaying a star in the left bottom corner.



Menu 2 – Noise sync – reading

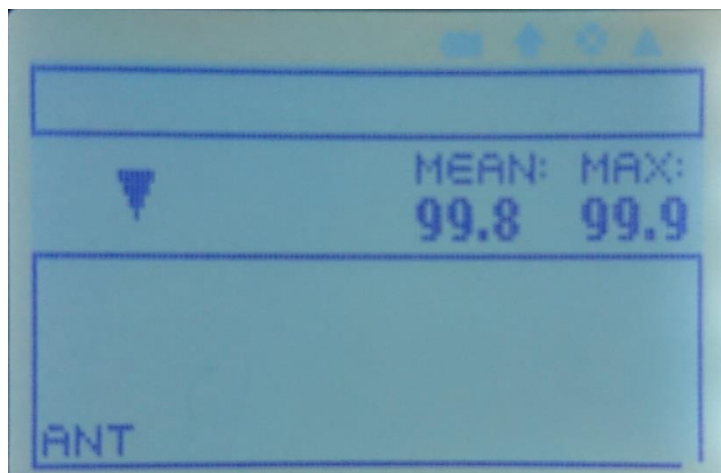


Menu 2 – Noise sync – reading with star

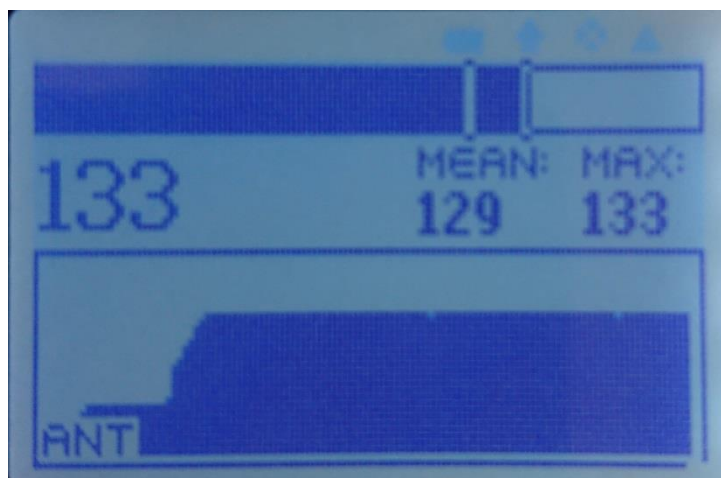
Menu 3 – Antenna field

Menu 3 is used to check if the reader generates proper antenna field. It has a different reading range, between 100 – 145 dB μ A/m, than the previous menus. Similarly to the previous menu, when the reader is not working properly a star is displayed in the left bottom corner.

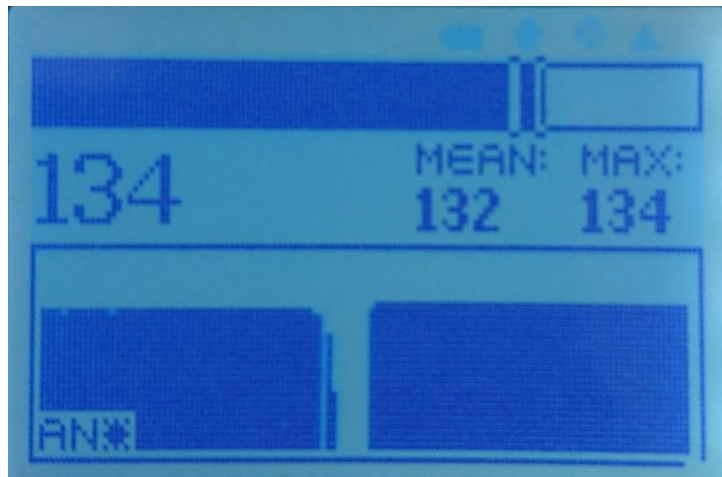
Measurement should be performed from a short distance (50 – 80cm). Keep the same distance while reading many antennas. A small change of the distance may significantly affect the reading.



Menu 3 – Antenna field – no reading



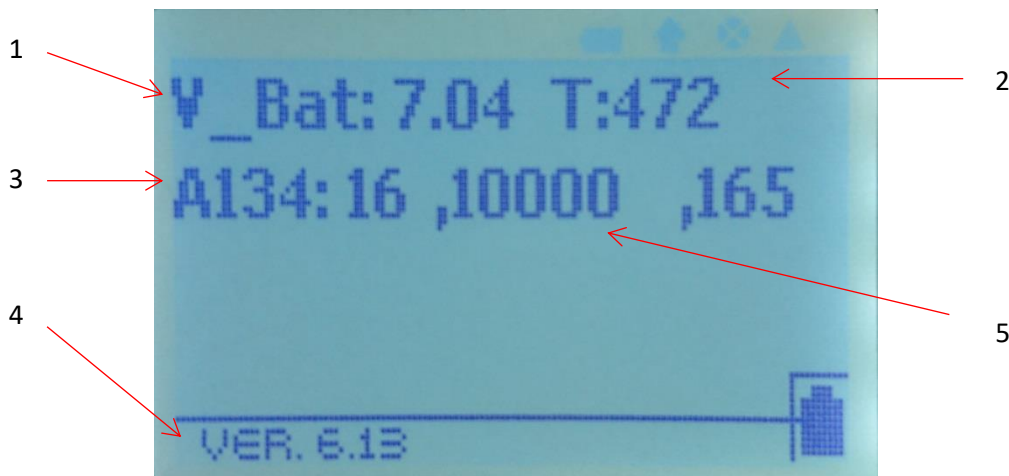
Menu 3 – Antenna field – reading



Menu 3 – Antenna field – reading with star

Menu 4 – Tuning

Menu 4 displays information about the device. After selecting this menu, autotuning of the reader is performed.

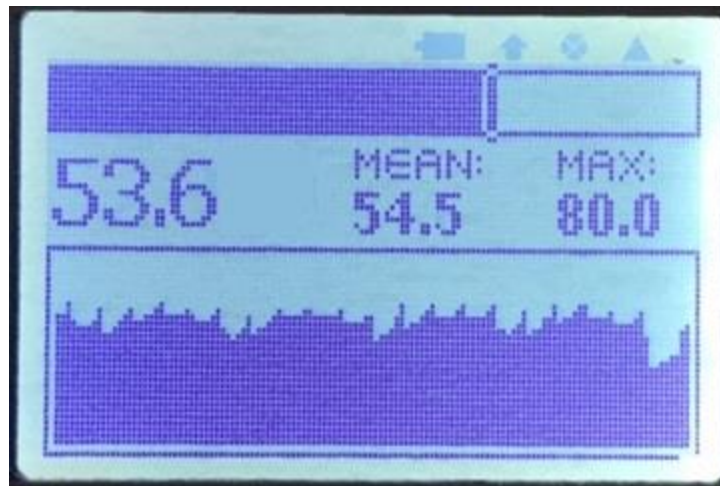


Menu 4 – Tuning

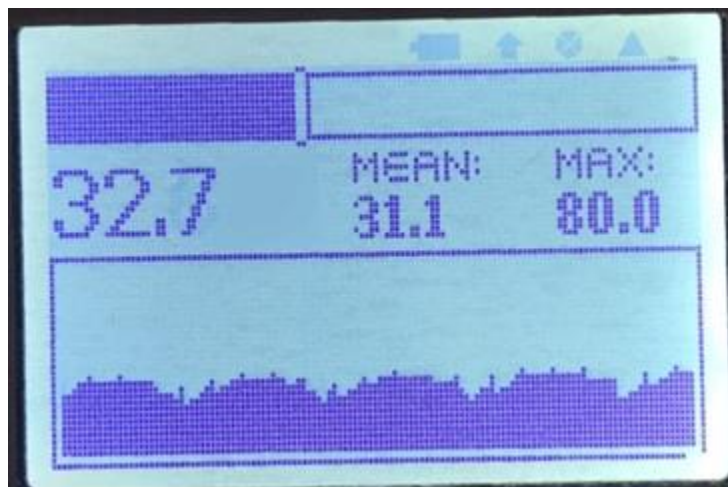
1. Battery Voltage Level
2. Battery Temperature
3. Antenna tuning values (frequency, condensers, antenna voltage (in V))
4. Firmware version
5. When value “10000” is showing only “11111” or “00000”, then something is wrong with the device, the antenna is not tuned correctly.

5. Examples of Readings

Information displayed on the Noise Detector when held 8 m from IRW antenna:



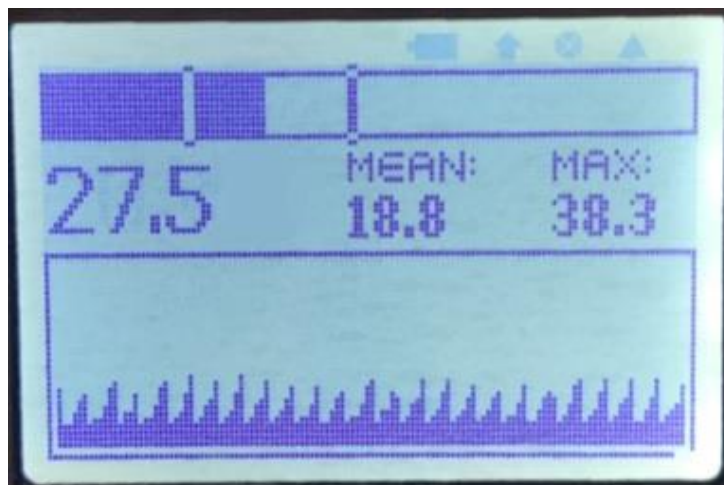
Information displayed on the Noise Detector when held 11 m from IRW antenna:

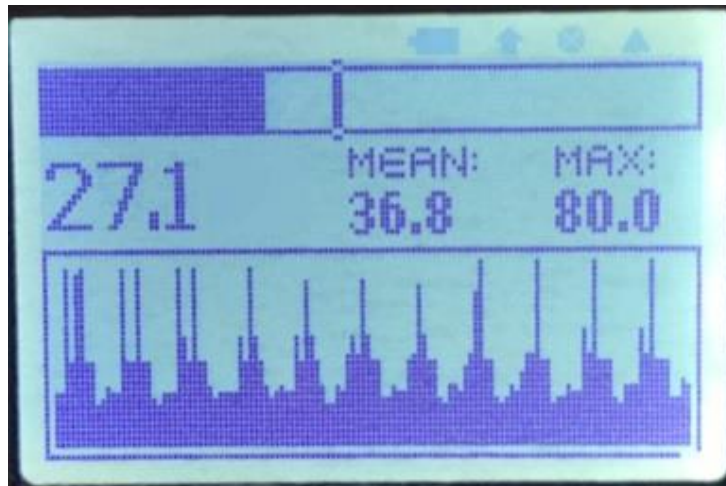


Information displayed on the Noise Detector in normal office environment with little noise:

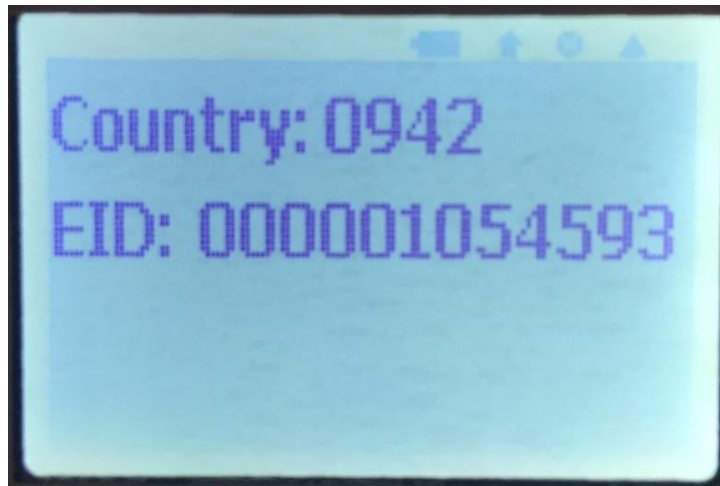


Information displayed on the Noise Detector showing periodic noise:





When clicking to read EID Tag, the following window will display information about the EID tag read:



To go back to main window click BACK button.

6. Analyzing Noise Levels

In a typical farm environment there will be noise from various equipment on the farm. Noise that can disturb EID reading on frequencies close to 124-134kHz, 98kHz (HDX/FDX/B tranponders), can come from for example motor's controllers, fluorescent light, pumps, ventilation, other antennas etc.

To diagnose the noise problem on the farm apply the following procedure:

1. Turn off all known RFID readers.
2. Place the antenna of the Noise Detector on the antenna of the reader and measure the noise level. If the antenna of the reader is much bigger (0.5 m or more diameter) than antenna of Noise Detector try to find the place where the noise level is the highest on the surface of reader antenna. Both antennas should be placed parallel to each other during this measure and be as close as possible.
 - If noise levels are low (below 15-20dB):
 - Probably the noise disturbing the antennas reading is not a source of problem. Check if antennas are synchronized or other issues with antennas if you still have issues with RFID reading distance.
 - If noise levels are high:
 - If the antenna of the reader is big (more than 15-20 dB) and the noise level is high only in small area of the antenna this means that the source of noise is probably a small device placed close to the reader. Try to localize it moving the antenna of Noise Detector toward to the place with highest level of noise. The source will be up to a few meters from the reader.
 - If the antenna of the reader is big and noise level is similar on all surface of the antenna it means that the noise source is probably in higher distance from the reader and disturbing device is a source of strong magnetic field on frequencies of interest (some power supply devices e.g. power supply from an Internet digital video camera or a big power inverter). The source of noise can be several meters from the reader and big parts of the farm made of magnetic steel can behave as source of noise in this case. In such case localization of noise source can be difficult. Finally try to turn off equipment that could create noise and see how noise levels change.
 - If the antenna of the reader is small do measurements not only on the surface of this antenna but also around this antenna in plane of the antenna. If noise level change strongly this means the source is probably close to the reader in other case see item above.

3. **Please remember that working reader's antennas generate noise visible on Noise Detector in MENU 1 NOISE, because they transmit 134.2 kHz electromagnetic field.**

4. Antenna in Noise Detector is directional, so you can move around with it and find direction where from is the biggest noise. This is the main advantage of noise detector – possibility to find where from is coming biggest noise and find its source.

7. Care for your Noise Detector

The rugged design makes the Noise Detector fit for challenging circumstances, but you still need to take care of it. The following instructions will help you get the most out of your Noise Detector in real life circumstances.

The body

Clean the Noise Detector with a soft cloth dampened with either water or a diluted mild detergent.

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Note: if a mild detergent is used, carefully rinse with water to ensure all residue is removed.

The screen

Protect the display from impact, pressure, or abrasive substances that can scratch or crack it.

Water, dust and dirt

Put the condom on before using the Noise Detector; this will protect the connector from the ingress of mud and water.

Temperature

Even though the Noise Detector is designed to be rugged, do not leave it in direct sunlight or in a vehicle in the sunlight for extended periods.

Batteries perform best at room temperature. The battery has a stable capacity when temperatures rise, but at lower the temperatures battery life may be reduced. When working in extremely cold conditions, battery performance will improve if you keep the Noise Detector warmer than the surrounding air if it is not being used. (e.g. keeping in a vehicle or in a jacket pocket).