RADIODET

RD510

Water pipe locator and leak detector

User Guide

90/RD510-UG-ENG/02

SPX TECHNOLOGIES

Contents

Section 1 - Preliminary instructions

1.1 Before using the device

Thank you for purchasing the Radiodetection RD510 plastic water pipe and leak locator. Before using the RD510 system, please read this manual in its entirety.

Radiodetection products, including this manual, are subject to continuous development. The information contained in this document is correct at the time of publication; however, the RD510 system, this manual and its contents are subject to change.

Radiodetection Ltd reserves the right to modify the product without prior notice. Some changes may have been made since the publication of this manual.

Please contact your Radiodetection dealer or visit www.radiodetection.com for the latest information on the RD510 product range.

1.2 Important notes

General information

- Reasonable levels of electrostatic discharge will not damage this instrument, which has been tested in accordance with IEC 61000-4-2. However, in extreme cases, malfunctions may occur. In this event, switch the instrument off and on again.
- Do not use the equipment if you suspect a fault or damage to a component or accessory.
- If you intend to carry out excavation work to locate pipes, follow the procedures laid down by your company, your local authority and your country.
- Always keep the equipment clean and dry. Do not store it in damp or wet conditions.
- It is important to regularly clean and sanitise products that may become contaminated through contact with dirty water or other contaminants.
- **Use of headphones**: you must be able to hear traffic and other hazards typical of outdoor environments. Before connecting headphones to an audio source, always turn the volume down and set it to the lowest level necessary to carry out measurements. Excessive exposure to loud sounds can cause hearing damage.
- Do not attempt to open or dismantle any component of this equipment unless specifically instructed to do so in the manual. Failure to do so may damage the equipment and invalidate the manufacturer's warranty.
- It is the user's responsibility to determine the validity of the measurement results and to draw conclusions or carry out further measurements. Radiodetection does not guarantee the validity of the measurement results and accepts no liability in this regard. We accept no liability for any damage that may arise from the use of the results. Please refer to the standard warranty terms supplied with the product for further information.

Safety

⚠ WARNING! It is the user's responsibility to determine whether conditions are suitable for using this device. Always carry out a risk assessment of the site to be inspected.

⚠ WARNING! Failure to observe safety warnings may result in serious injury or death.

Follow national safety procedures, your company's safety procedures and/or applicable requirements when using this equipment in any environment or workplace.

Always wear the correct personal protective equipment when using the RD510 system.

If in doubt about applicable procedures or guidelines, contact the site or company safety officer or a representative of the local authority for further information.

This equipment must only be used by qualified and trained personnel and after the operating manual has been read in full.

WARNING: To avoid the risk of damage, do not use the RD510 system for more than 30 minutes or on water supply systems of inadequate quality. Always use a hose adapter when connecting the pulsed water valve to a tap within 15 metres of a building.

WARNING! Ensure that the Tx transmitter is switched off before connecting or disconnecting the pulsed water valve. WARNING! Turn the volume down before using headphones to avoid damaging your hearing.

WARNING! This equipment is NOT approved for use in areas where hazardous gases are present. WARNING! Before removing the transmitter batteries, switch off the unit and disconnect all cables.

WARNING! The battery compartment cover allows you to disconnect the battery power supply.

WARNING! Do not position the equipment in such a way that it may be difficult to disconnect the unit from all power sources. WARNING! If used for purposes other than those specified by the manufacturer, safety may be compromised.

WARNING: The carrying case protects the RD510 locator's control unit from water and debris. If it is lost or damaged, contact Radiodetection or your local representative for assistance in requesting a replacement.

Optional rechargeable transmitter batteries

WARNING! Use only the charging system supplied by Radiodetection. Using other chargers may compromise safety and/or reduce the service life of the batteries.

WARNING! During prolonged use at maximum power, the batteries may become hot. Take care when replacing or handling the batteries.

WARNING! Do not tamper with or attempt to dismantle the batteries.

Rechargeable batteries

WARNING: Do not allow the batteries to run completely flat, as this will reduce their service life or cause irreparable damage. If the equipment is not used for a long period, charge the batteries at least once a month. If the equipment is stored for more than a month and the batteries have been fully discharged, check that the charger is working correctly, in accordance with the instructions, and that the batteries do not overheat.

WARNING: If the batteries are suspected of being faulty, contact an authorised repair centre to carry out the necessary inspections and repairs. Local/national/IATA transport regulations may prohibit the shipment of faulty batteries. Contact your courier to find out about any applicable restrictions or guidelines. Your Radiodetection representative can provide details of authorised repair centres in your area.

Disposal

This symbol on products, accessories or documentation indicates that the product and its electronic accessories (e.g. charger, headphones, USB cable) must not be treated as household waste, but must be disposed of professionally. You must ensure that you dispose of the equipment at a recycling centre or designated collection point for the recycling of electrical and electronic equipment. Separate collection and recycling of the equipment at the time of disposal will help to conserve natural resources and ensure their recycling to protect human health and the environment. For further information on disposal and recycling centres, contact your local council's relevant department, your local waste management company or the product supplier.

At the end of its useful life, dispose of the device correctly in accordance with applicable regulations.

Batteries must be disposed of in accordance with company procedures and/or applicable local or national guidelines and regulations.

1.3 Regulatory compliance

The declaration of conformity can be downloaded from the page dedicated to the RD510 plastic water pipe and leak locator on the website https://www.radiodetection.com/en/products/water-leak-detector/rd510-water-pipe-locator-leak-detector

FCC Declaration of Conformity

This equipment complies with Part 15 of the FCC Rules. Its use is subject to the following two conditions:

- The equipment must not cause harmful interference.
- The equipment must accept any interference received, including interference that may cause undesired operation.

Having undergone the required tests, the equipment has been found to comply with the limits for Class A digital devices as set out in Part 15 of the FCC Rules.

These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and may radiate radio frequency energy and, if not installed and used in accordance with the manufacturer's instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area may cause harmful interference, which the user will be required to correct at their own expense.

Modifications: modifications to this equipment not approved by Radiodetection may void the user's authority granted by the FCC to operate it.

Declarations of Conformity to Industry Canada

ICES-003 Class A Notice:

This Class A digital apparatus complies with the Canadian ICES-003 standard. Class A NMB-003

Notice:

This Class A digital apparatus complies with the Canadian NMB-003 standard

Environment

WEEE, RoHS

Manufacturing

ISO 9001:2015

1.4 Trademarks

Radiodetection is a subsidiary of SPX Technologies, Inc. Radiodetection and RD510 are trademarks or registered trademarks of Radiodetection in the United States and/or other countries.

1.5 Training

Radiodetection provides training services for most of its products. Our qualified instructors train equipment operators and other personnel at a location of your choice or at Radiodetection's premises.

For further information, please visit www.radiodetection.com or contact your local Radiodetection representative.

Section 2 - RD510 Water Pipe and Leak Locator

2.1 Overview

Figure 2.1: RD510 Water Pipe and Leak Locator

The acoustic sensor is used to listen for surface sounds. Use it on hard surfaces (such as concrete or tarmac/asphalt) or use the adapter and pegs for soft ground.

2.2 RD510 Locator Display

Figure 2.2: RD510 Locator Display

2.3 Meaning of the LEDs

Figure 2.3: Green LED

Green: the unit is switched on.

Figure 2.4: Red LED

Red: the unit is charging.

Figure 2.5: LED off

Off: unit switched off or fully charged (if connected).

2.4 Test

Figure 2.6: Charging socket on the RD510 tracker display

To charge the display, use the supplied USB Type-C cable and a suitable USB charger (5 V, 2 A). During charging, the LED indicator turns red and then turns off when charging is complete.

2.5 Switching on and off

Figure 2.7: Power button

To switch the RD510 tracker display on or off, press and hold the power button.

2.6 Reset

Figure 2.8: Reset button

In the unlikely event that the RD510 locator display freezes, you can reset it by inserting a pin into the reset button. The display will switch off and you will need to restart it by pressing the power button.

2.7 Sensor input

Figure 2.9: Connecting the sensor to the RD510 locator display

Unscrew the connector cap and screw in the sensor plug. The plug can only be inserted in one specific position, so align the white orientation marks on the connector and the plug.

WARNING: The connector and plug are keyed. Do not force the plug in, but turn it gently until it engages with the connector.

2.8 Headphone output

Figure 2.10: Audio socket on the RD510 locator display

The audio output on the RD510 locator display allows you to plug in a standard audio jack. Plug in the headphone cable.

This is a standard 3.5 mm stereo jack.

⚠ WARNING: Check the volume level before putting on the headphones.

2.9 Start-up screen

Figure 2.11: RD510 locator start-up screen

The start-up screen appears when the device is switched on. A progress bar is displayed at the bottom of the screen.

2.10 Home Page

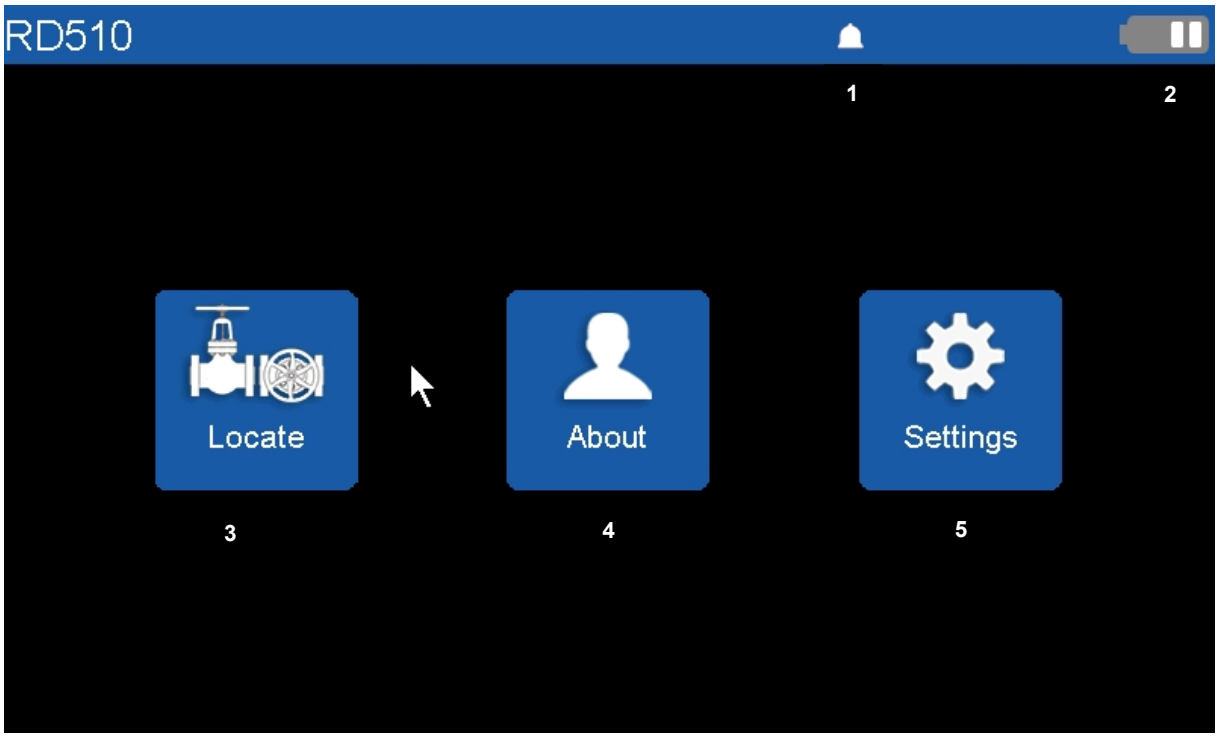

Figure 2.12: Home screen of the RD510 locator display

1. Sensor icon, visible only if the acoustic sensor is connected
2. Battery level
3. Locate menu
4. About
5. Settings

2.11 Touch screen/Navigation

The RD510 locator has a touchscreen display:

- Use your fingers to select options or scroll through the screen
- Tap the screen once with your finger to access a menu or launch a function
- Within a sub-menu or screen, you can use the two icons in the navigation bar

 : takes you to the previous screen

 : closes the current screen and returns to the Home screen

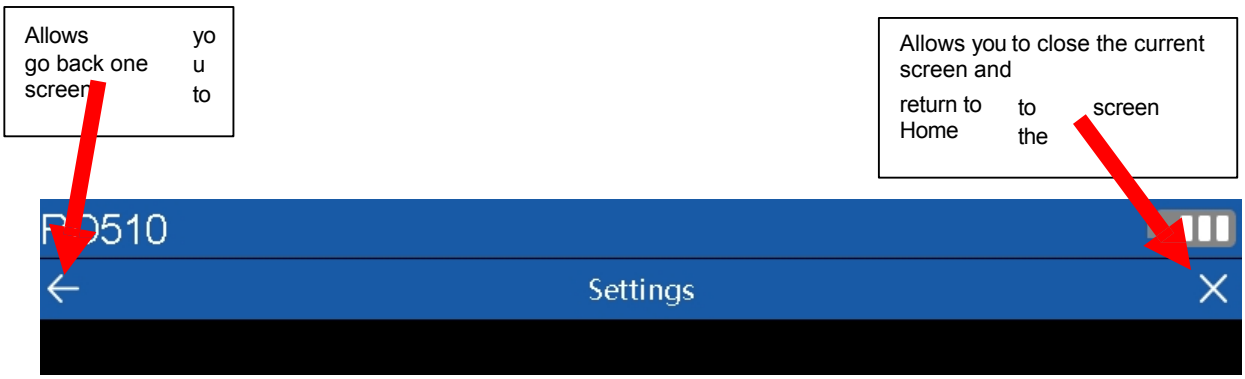

Figure 2.13: Navigation icons on the RD510 locator display

2.12 About screen

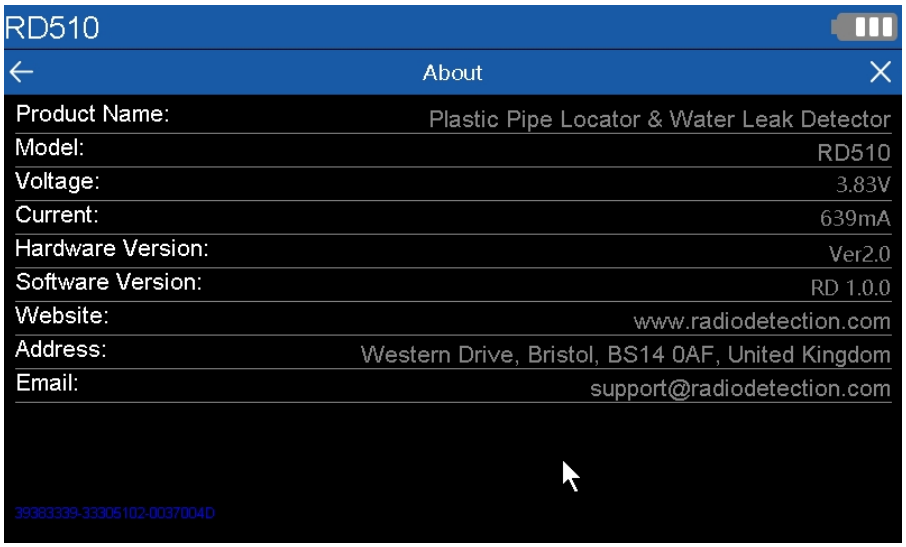

Figure 2.14: About screen on the RD510 locator display

This screen provides general information about the RD510 locator display and shows Radiodetection's contact details.

2.13 Settings screen

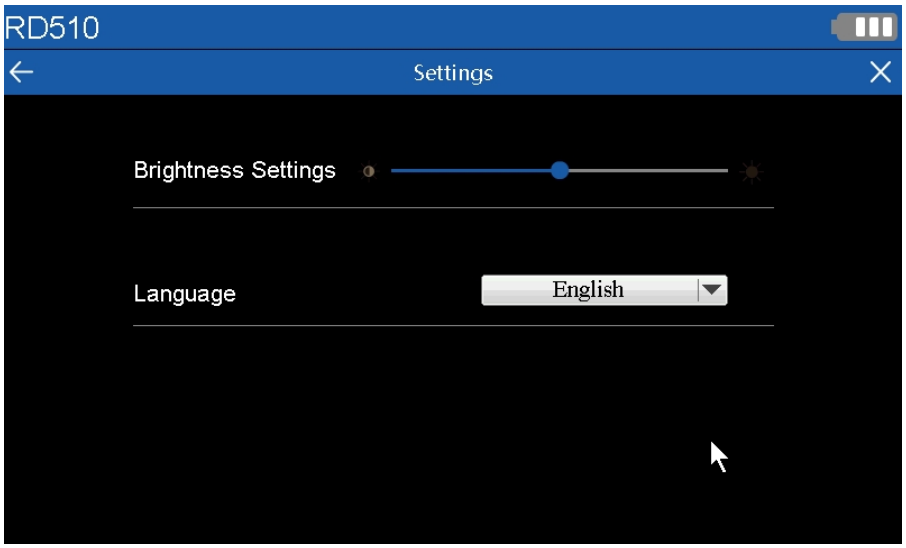

Figure 2.15: About screen on the RD510 locator display

This screen provides access to the RD510 locator settings:

- Bright**ness Settings**
  This is a slider bar which, if reset, returns to the centre position (default value).
- **Language** (Language)
  Only English is supported.

2.14 Locate screen

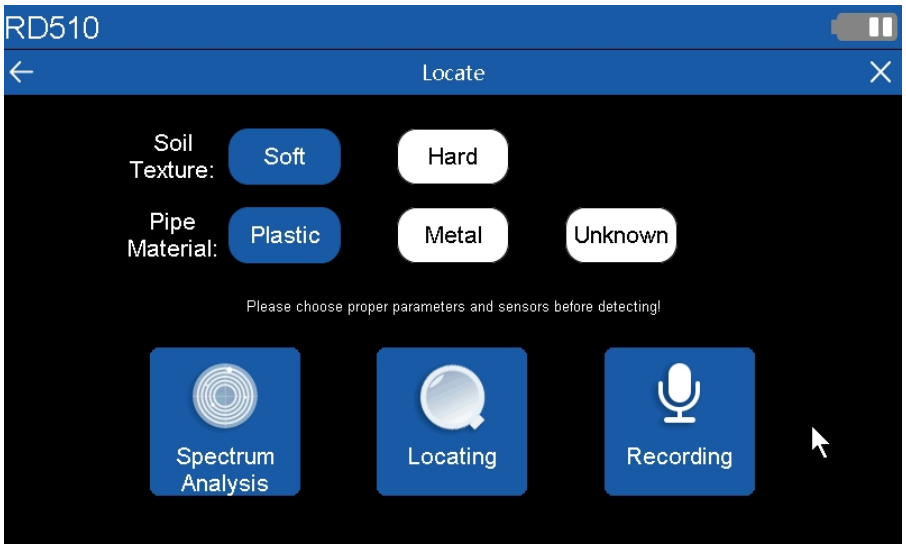

Figure 2.16: Locate screen of the RD510 locator

Use this screen to set the processor's input filter for detection conditions:

- Soil Texture:
  you can choose between Soft and Hard
- Pipe Material:
  you can choose between Plastic, Metal and Unknown

Select the appropriate options based on the hardness of the ground and the pipe material.

N o t e : You cannot change the selected parameters once you have entered Spectrum Analysis or Locating mode.

2.15 Spectrum Analysis screen

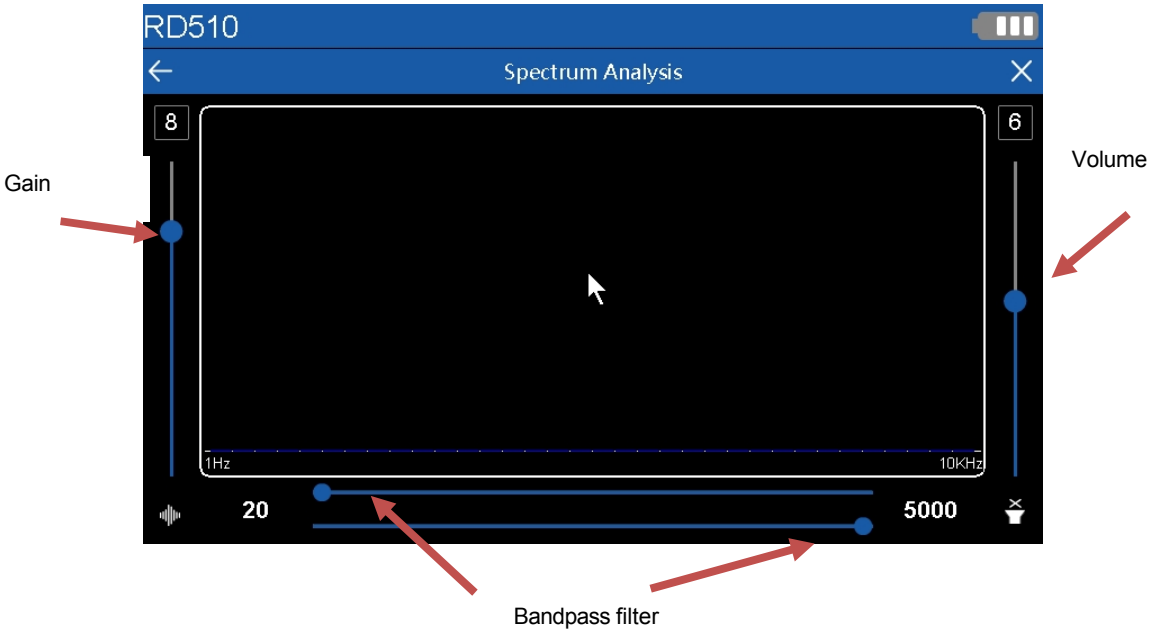

Figure 2.17: Spectrum Analysis screen of the RD510 locator

When the sensor is connected and enabled, this screen displays the frequency analysis of the received audio signal in real time.

To enable the acoustic sensor:

- Enable the acoustic sensor input by pressing the sensor control button once.

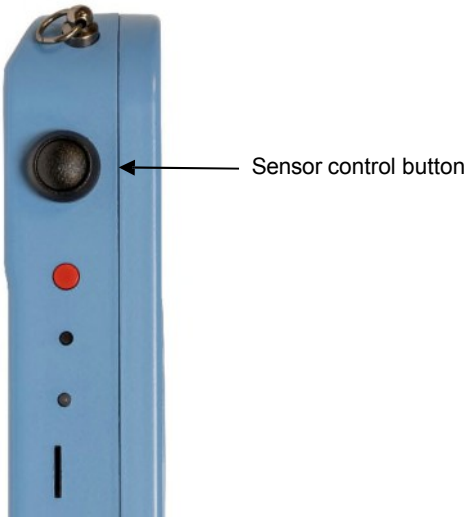

Figure 2.18 Activating the RD510 locator's acoustic sensor

There are 3 controls available:

- **Volume**: allows you to control the sound level in the headphones

WARNING: excessive volume may cause hearing damage.

- **Gain**: allows you to increase or decrease sensitivity
- **Band Pass Filter**: allows you to use low and high band frequencies to filter out unwanted noise

2.16 Locating Screen

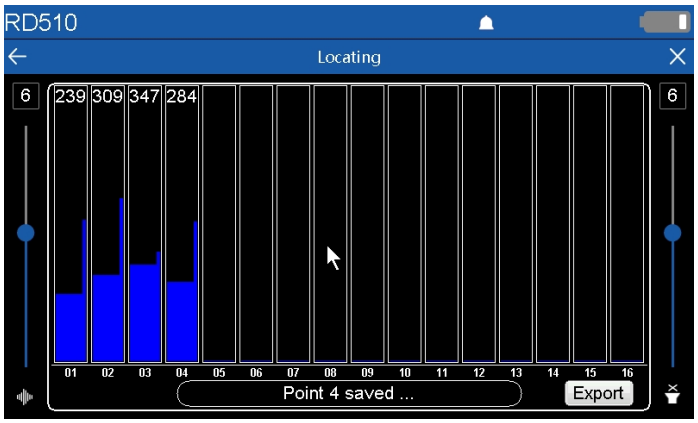

Figure 2.19: Locating screen of the RD510 locator

When the sensor is connected and enabled, this screen allows you to take up to 16 measurements to better identify the location of the pipe or leak.

To enable the acoustic sensor:

- Enable the acoustic sensor input by pressing the sensor control button once.

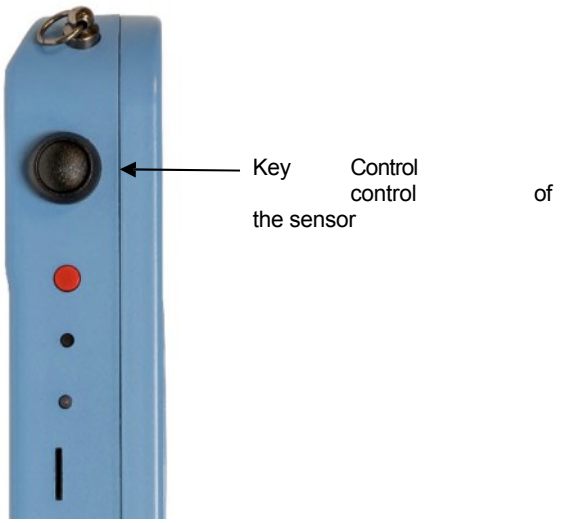

Figure 2.20: Activating the RD510 locator's acoustic sensor

To start a measurement:

1. Move the acoustic sensor to the desired position
2. Remove your hand from the handle (to avoid producing any further noise that might be picked up by the sensor) and avoid making any other sounds
3. Tap column 01 and the unit will display 2 columns:

    - a thicker bar representing the average underground sound, which excludes all random noise
    - a thinner bar on the right representing the instantaneous noise

4. Once the measurement has stabilised, you can lock the reading by pressing column 01 again. The colour of the signal value changes from red to white.

5. Move the acoustic sensor to the next position, tap column 02 and repeat step 4, pressing column 02, which is now providing the measurement.
6. Repeat steps 4 and 5 until the measurements are complete.

There are 2 controls available:

- **Volume**: allows you to control the sound level in the headphones

WARNING: excessive volume can cause hearing damage.

- **Gain**: allows you to increase or decrease the sensitivity

NOTE: Set the gain **only** during the first measurement to ensure consistency throughout all measurements.

The thick peak bar indicates the target position.

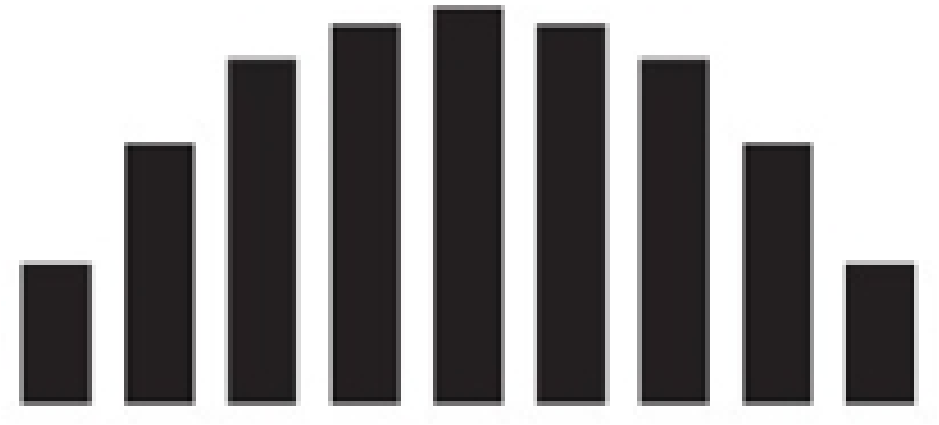

Figure 2.21: Audio measurements of the ideal peaks of the target tube

You can export the image using the Export button. This saves the image to the memory card. You can view these images by connecting the control unit to a PC.

Section 3 - Pulsed Water Transmitter

3.1 Overview of the pulsed water transmitter kit

Figure 3.1 Pulsed water transmitter kit for the RD510 locator

*Not supplied with US kits

NOTE: The pulsed water valve used varies depending on the kit purchased.

3.2 Operating principle of the pulsed water transmitter

The pulsed water transmitter generates the signal that is picked up by the acoustic sensor.

The pulsed water transmitter generates this signal by automatically opening and closing a pulsed water valve, allowing water to flow intermittently through a pipe for a short period of time. This regular interruption of the water flow creates pressure variations in the water pipe that travel as waves and cause a slight movement in the pipe walls. The acoustic sensor picks up the sound generated by the pipe's movement on the ground surface and provides the user with a measure of the sound's intensity. The user locates the position of the pipe beneath the ground surface by detecting the level of the maximum signal (peak) on the surface.

Pulsed water transmitters are connected to water sprinklers, taps, meters, hydrants and water-based cleaning systems. Pulsed water transmitters are equipped with:

- Adapter with ON/OFF valve
- Drain pipe
- Filter washer (not shown in the image)

Pulsed water valves are supplied with imperial or metric fittings depending on your geographical location

Always flush the connection points until the water running through is free of rust, sludge, sealants and foreign matter before connecting a pulsed water transmitter valve to the water line.

Always use the filter washer supplied on the inlet of the pulsed water valve.

Check the filter washer guard (located inside the pulsed water transmitter inlet) for any debris. Remove and clean if dirty. Replace the filter washer if the guard is damaged.

NOTE: The water pipes must be full and under pressure. The optimum pressure range is between 3 and 7 bar.

⚠ NOTICE: Always check that the maximum pressure of the pulsed water valve does not exceed the pressure of the target water pipe by checking the coloured band on the connection cable:

- Yellow: 4 bar max
- Red: 10 bar max

3.3 Pulsed water control unit

Figure 3.2 Pulsed water control unit of the RD510 locator

3.4 Switching on and off

To switch the pulsed water transmitter on or off, press and hold the power button.

WARNING! Ensure that the Tx transmitter is switched off before connecting or disconnecting the pulsed water valve.

3.5 Power supply options

The pulsed water transmitter can be powered by 8 alkaline batteries (type D) using the supplied 12 V DC car cable or the optional Radiodetection rechargeable lithium-ion battery pack.

The power button LED changes colour when the batteries need replacing or recharging.

Alkaline batteries

The battery compartment is located underneath the transmitter body

To insert the batteries (size D) into the transmitter:

1 Unclip and remove the accessory tray.

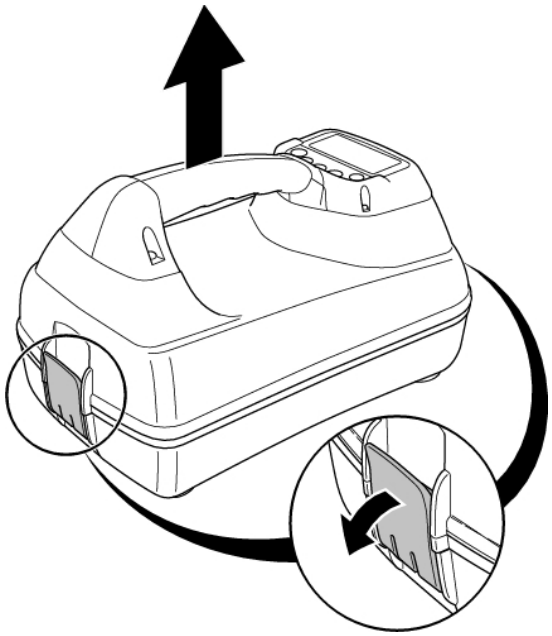

Figure 3.3 Opening the accessory tray on the RD510 locator's pulsed water transmitter

2 Use the latch to unlock the battery compartment.

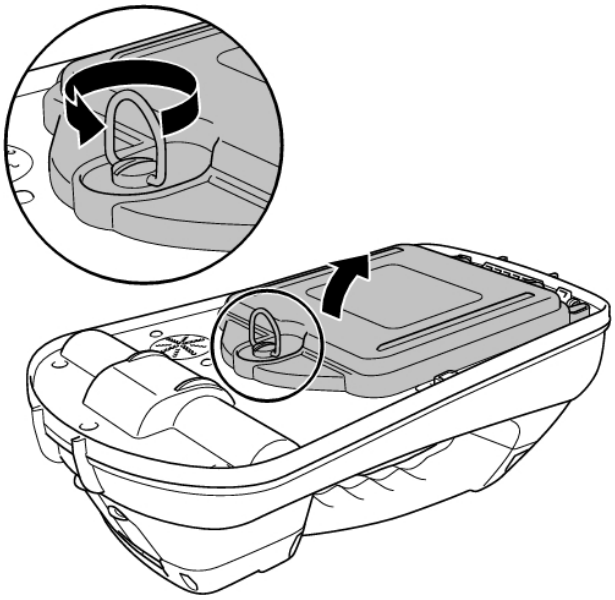

Figure 3.4 Opening the battery compartment of the RD510 locator's pulsed water transmitter

3 Insert eight alkaline batteries (type D), taking care to ensure the correct polarity of each one

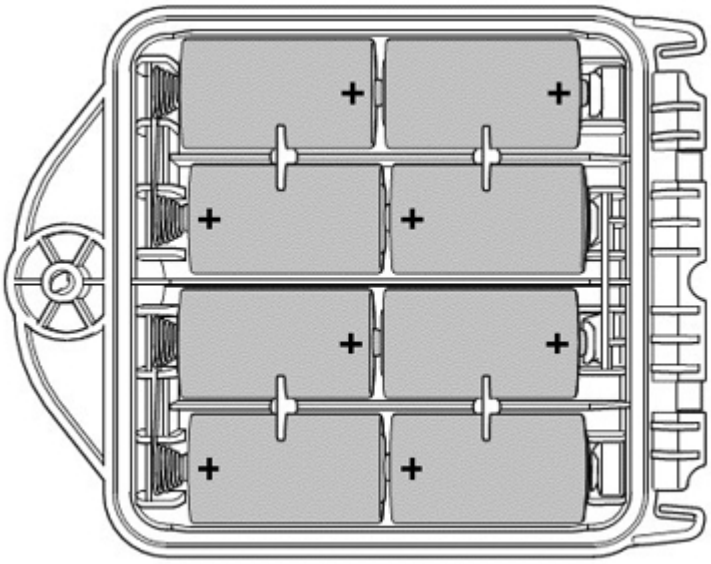

Figure 3.5 Battery tray of the RD510 locator's pulsed water transmitter

4 Follow the instructions to close the battery tray and reinsert the instrument tray.

Optional lithium-ion battery pack

To use the optional lithium-ion battery pack, you must insert the battery pack in place of the standard alkaline battery tray:

1 Unclip and remove the accessory tray.

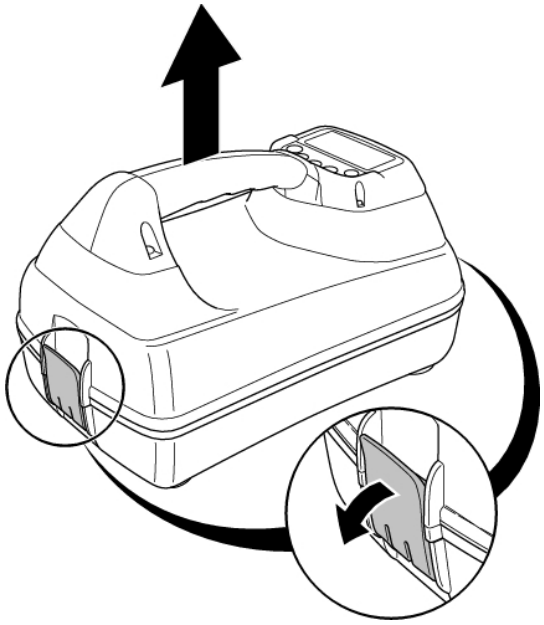

Figure 3.6 Opening the accessory tray of the RD510 locator pulsed water transmitter

2 Use the latch to unlock the battery compartment.

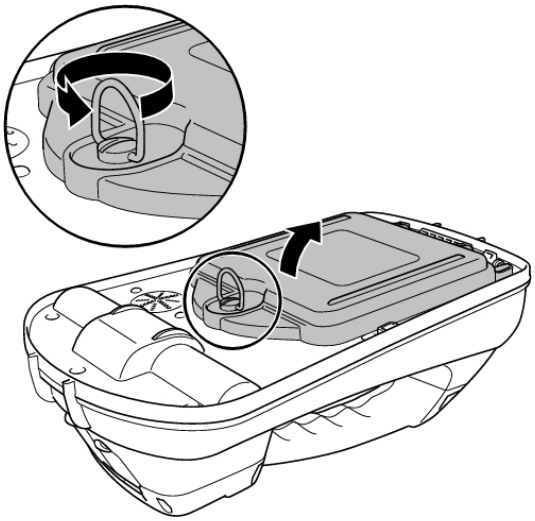

Figure 3.7 Opening the battery compartment of the RD510 locator's pulsed water transmitter

3 Release the fasteners (Fig. 3.8) by pressing gently, then lift out the battery pack.

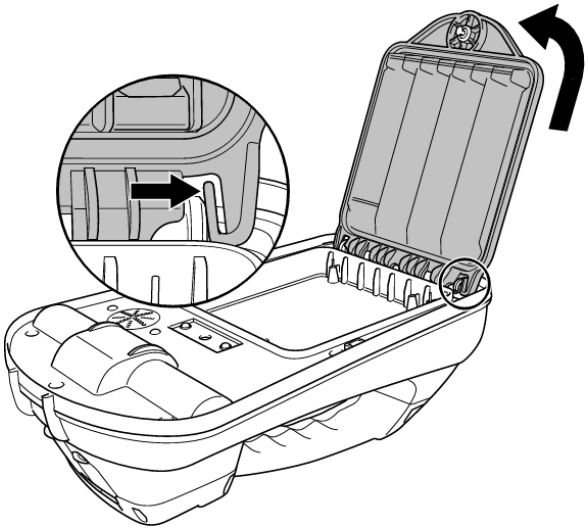

Figure 3.8 Removing the battery compartment of the RD510 locator’s pulsed water transmitter

1 Align the clips on the lithium-ion battery pack with the corresponding guides on the transmitter body and press to secure it in place.

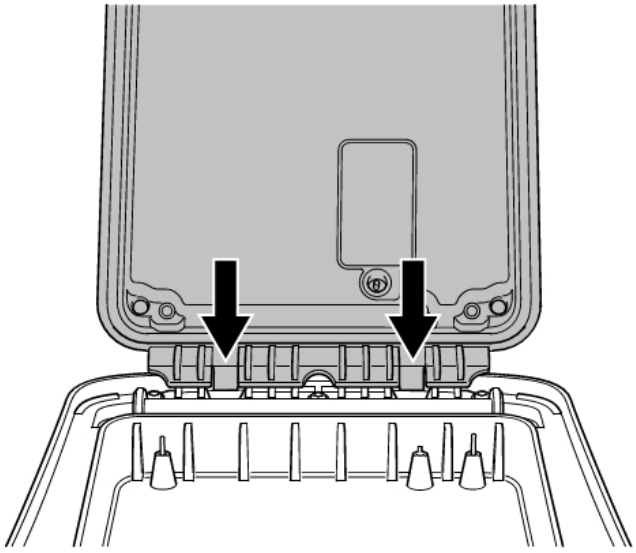

Figure 3.9 Inserting the optional lithium-ion battery pack into the RD510 locator’s pulsed water transmitter

4 Close the battery pack, turn the latch and replace the accessory tray.

Charging the optional lithium-ion battery pack

⚠ WARNING! Use only the charging system supplied by Radiodetection. Using other chargers may compromise safety and/or reduce the service life of the batteries.

WARNING: Do not allow the batteries to run completely flat, as this will reduce their service life or cause irreparable damage. If the equipment is not used for a long period, charge the batteries at least once a month.

⚠ WARNING! During prolonged use at maximum power, the batteries may become hot. Take care when replacing or handling the batteries.

⚠ WARNING! Do not tamper with or attempt to dismantle the batteries.

WARNING: If you suspect that the battery is faulty or if there are signs of discolouration or physical damage, send the entire unit to an authorised repair centre so that the necessary checks and repairs can be carried out. Local, national or IATA transport regulations may prohibit the shipment of faulty batteries. Contact your courier to find out about any applicable restrictions or guidelines. Your Radiodetection representative can provide details of authorised repair centres in your area.

Batteries can be recharged using the Radiodetection mains or vehicle charger.

NOTE: The charging temperature range is between 0 and 45 °C. Do not attempt to recharge the batteries outside this range.

To recharge the battery pack, connect the transmitter's charger to the charging socket.

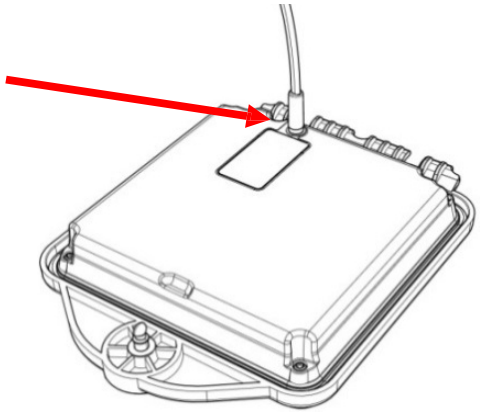

Figure 3.10 Charging the optional lithium-ion battery pack for the RD510 locator's pulsed water transmitter

For further information on charging the batteries, please refer to the instructions supplied with the charger.

Section 4 - Operation

4.1 System Application Techniques

It is difficult to recognise the position of a pipe without the aid of the display's visual cues to gauge the signal level. It can be challenging to detect slight variations in audio signal levels. Always adjust the sensitivity to maintain an average meter reading during detection. The accuracy of the detection is approximately equal to plus or minus one pipe diameter. Carry out test pits or expose the pipe to confirm its exact position before carrying out any excavation work.

The best positioning results are achieved by starting the trace at least 5 metres away from the location where the pulsed-water transmitter is connected. Signal levels are normally too strong in the immediate vicinity of the pulsed-water transmitter.

Once the pipe's location has been determined, you can quickly trace its direction and check for any changes in position by taking periodic readings.

4.2 Setting up the RD510 Plastic Water Pipe and Leak Locator

Follow the procedure below.

1 Ensure that the display is inside the carrying case.

Figure 4.1 Display of the RD510 locator inside the carrying case

2 Attach the shoulder strap to the carrying case.

Figure 4.2 Carrying case with shoulder strap

3 Attach the acoustic sensor to the telescopic handle (rotate to lock and unlock) and adjust as required.

Figure 4.3 Telescopic handle and acoustic sensor

4 When using on soft ground, attach the appropriate adapter and pegs.

5 Connect the soil microphone sensor to the display.

Figure 4.4 Acoustic sensor connector

6 Connect the audio lead to the control unit and the headphones.

Figure 4.5 Connecting the headphone cable

7 Switch on the control unit; the start-up screen will appear briefly on the display.

Figure 4.6 Powering on the RD510 locator display

Figure 4.7 Start-up screen

8 Select Locate.

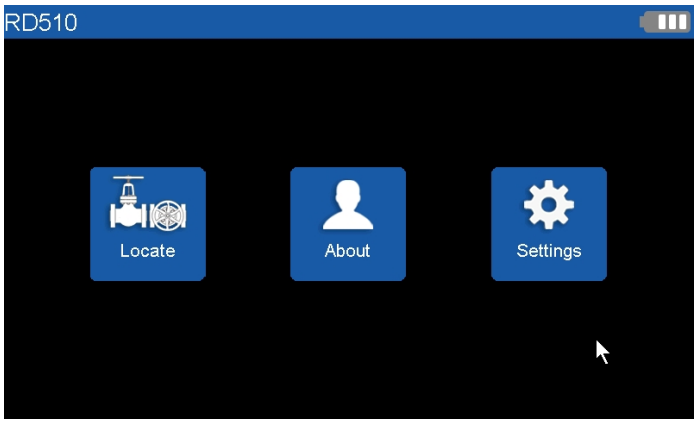

Figure 4.8 Home screen of the RD510 locator

9 Set the detection parameters.

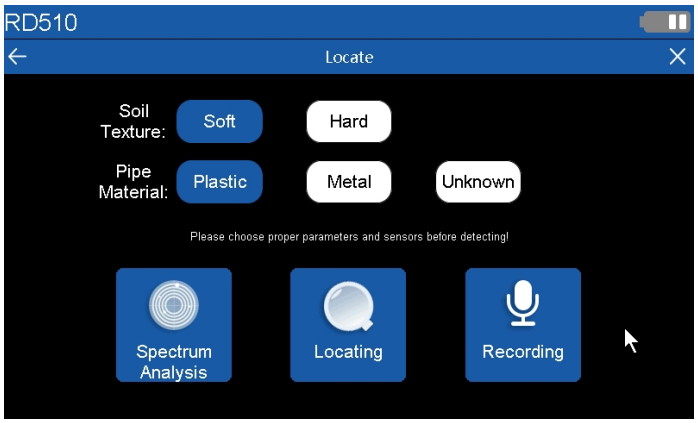

Figure 4.9 Locate screen of the RD510 locator

Select the appropriate options based on the soil hardness and the pipe material.

- Soil Texture: you can choose between Soft and Hard
- Pipe Material: you can choose between Plastic, Metal and Unknown

N o t e : You cannot change the selected parameters once you have entered Spectrum Analysis or Locating mode.

4.3 Locating a pipe

Pulsed water transmitter

⚠ NOTICE: This equipment must only be used by qualified and trained personnel.

To locate and trace a pipe over long distances, you must use the pulsed water transmitter and pulsed water valve connected to the target pipe.

Pulse water valves are connected to water outlets, taps, meters, hydrants and water flushing systems.

Pulse water valves are supplied with imperial or metric-decimal fittings depending on your geographical area. Use the connection kit provided to connect to the target pipe.

If other fittings are used, check that the pressure rating is suitable for the application.

Always flush the connection points until the water running through is free of rust, mud, sealants and foreign matter before connecting a pulsed water transmitter valve to the water line.

Always use the filter washer supplied on the inlet of the pulsed water valve. Always check that the filter is free from debris or damage. Replace the filter washer if it is damaged.

NOTE: The water pipes must be full and under pressure. The optimum pressure range is between 3 and 7 bar.

⚠ WARNING: Always check that the maximum pressure of the pulsed water valve does not exceed the pressure of the target water pipe by checking the coloured band on the cable:

- Yellow: 4 bar max
- Red: 10 bar max

WARNING: Always use the pressurised pulsed water valve on external pipes. If using an external tap connected to a building's internal pipework, always use the adapter and never use the system for prolonged periods (maximum 30 minutes).

The procedure required to connect to a target pipe is always the same, regardless of the type of pipe and its connection adapters:

1 Make sure that the pulsed water transmitter is switched off and that the pulsed water valve cable is disconnected.

2 Connect the pulsed water valve to the target pipe.

3 Position the drain hose to ensure the water is drained away correctly.

4 Connect the pulsed water valve cable to the transmitter.

5 With the pulsed water transmitter securely and correctly connected, switch on the transmitter by pressing the power button.

With the pulsed water transmitter switched on, proceed with pipe detection and tracing.

Spectrum Analysis Mode

This operating mode allows the operator to position the acoustic sensor near the presumed direction of the pipe's location.

- Enable the acoustic sensor input by pressing the sensor control button once.

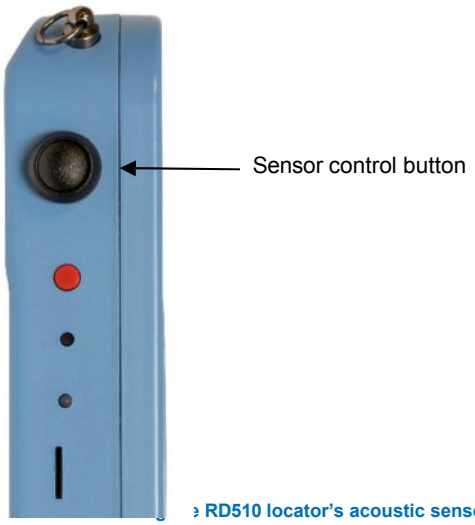

Fig e RD510 locator's acoustic sensor

When the sensor is connected and enabled, this screen displays the frequency analysis of the received audio signal in real time.

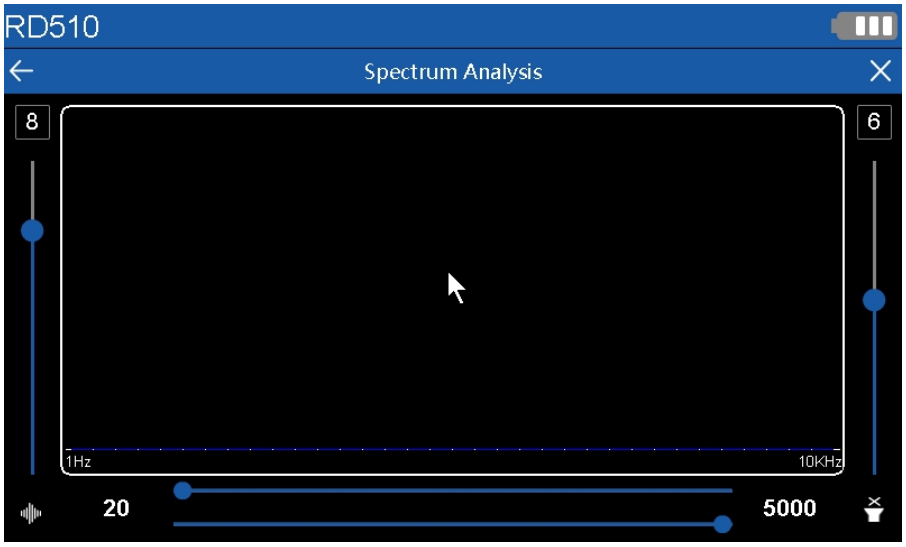

Figure 4.11: Spectrum Analysis screen of the RD510 locator

There are 3 controls available:

- **Volume**: allows you to control the sound level in the headphones

⚠ WARNING: excessive volume may cause hearing damage.

- **Gain**: allows you to increase or decrease the sensitivity
- **Band Pass Filter**: allows you to use low and high frequency bands to filter out unwanted noise

The operator can position the ground microphone sensor in different locations to try to identify the position where the responses are strongest. In addition, the headphones allow you to listen for peak audio responses to identify the approximate direction of the pipe.

With Spectrum Analysis mode enabled, you can adjust the Gain and Band Pass Filter options to filter out any unwanted noise from the area of interest. The display shows various responses with bar graphs corresponding to the signal applied to the pulsed water transmitter.

After configuring the Gain and Band Pass Filter options, the operator can position the acoustic sensor along the areas where they believe the pipe might be located.

If there are no indications as to the direction of the pipe, it is advisable to carry out a 360° scan of the area. This scan must be performed at least 5 m away from the location where the pulsed water transmitter is connected.

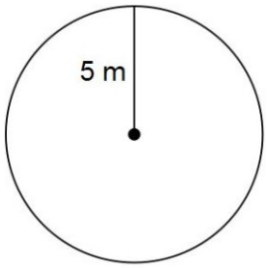

Figure 4.12: Survey area

Using both the audio output and the information from the Spectrum Analysis mode, the operator can trace the approximate position of the pipe.

Locating mode

For greater accuracy in locating the pipe, the Locating function can be used as an additional step following the Spectrum Analysis mode.

This function allows you to narrow down the area marked as the probable location of the pipe.

In this mode, you can take up to 16 readings from left to right in the likely direction of the pipe.

Once the probable pipe location has been marked, access the Locating option on the unit, ensuring that the ground microphone sensor is enabled.

Place the ground microphone to the left of the probable pipe location, at a distance of approximately 1 metre. Click on column 01 to

start and stop a measurement.

There are 2 columns:

A thicker column representing the sound beneath the ground surface and a thinner column on the right representing the ambient noise. A number (initially red) appears at the top of the column, corresponding to the signal value.

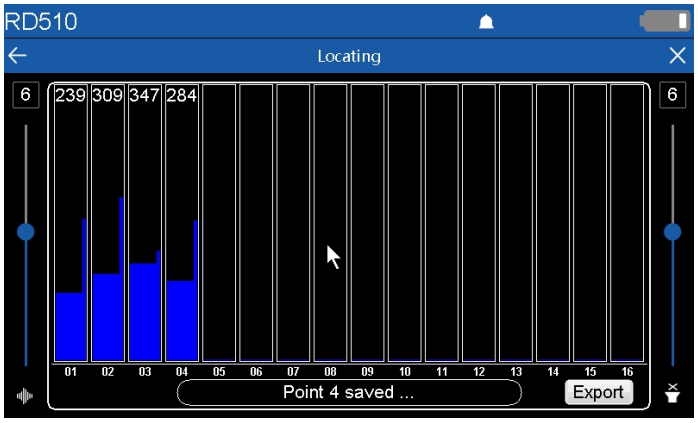

Figure 4.13: Locating screen of the RD510 locator

Wait for the average sound level to stabilise, as indicated by the thick bar. This takes a few seconds. Once it has stabilised, press the bar again and the reading will be recorded. The signal value at the top of the bar will change from red to white.

Move the ground microphone sensor to the right, towards the target, and repeat the procedure until you move past the probable target.

Several bars will appear, similar to those in the graph above; the pipe will be beneath the tallest thick bar.

The aim is to acquire data points before and after the target's probable position in order to obtain a peak response when directly above the target.

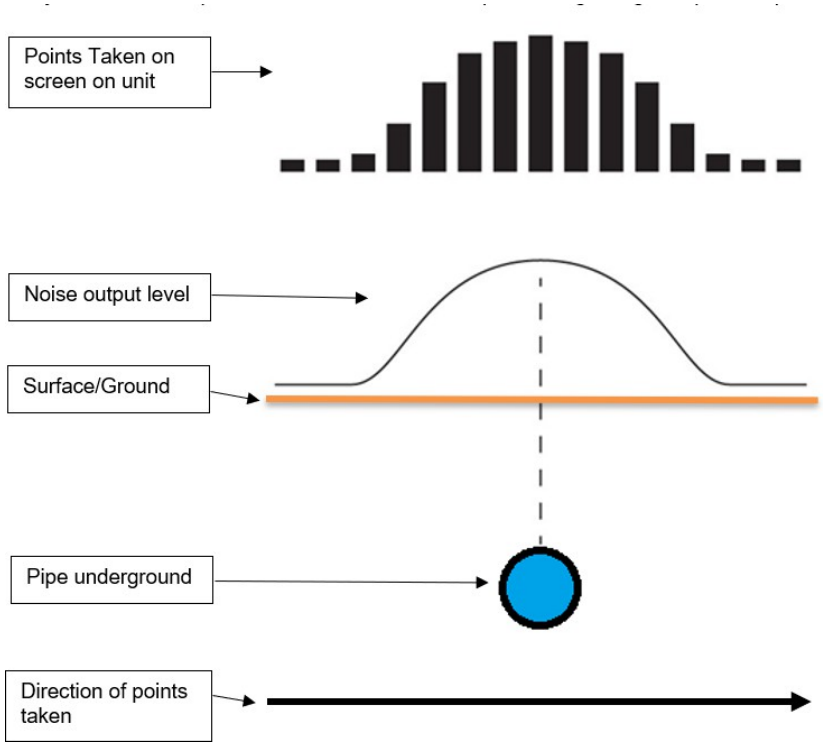

Figure 4.14: Locating mode of the RD510 locator – Pipe

Once the graph is complete, you can export the image by pressing Export. This saves the image to the memory card. You can view these images by connecting the control unit to a PC.

4.4 Locating a leak

You can locate a leak more effectively after determining the pipe's position and without the pulsed water transmitter connected.

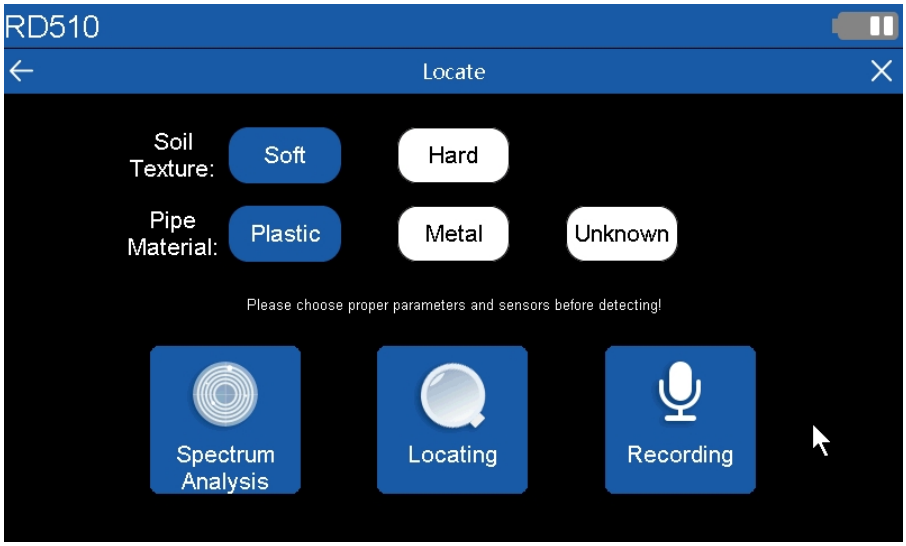

Figure 4.15: Locate screen of the RD510 locator

Spectrum Analysis mode

Select the Spectrum Analysis option

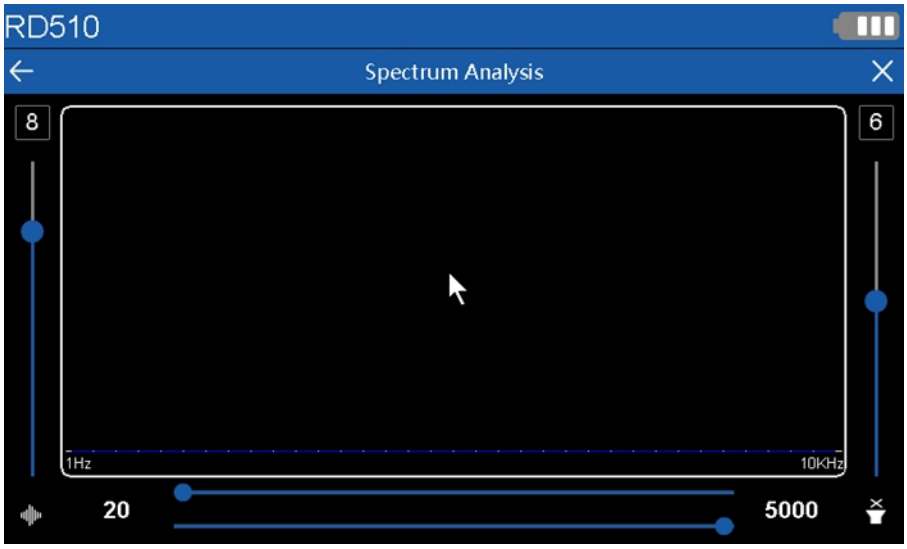

Figure 4.16: Spectrum Analysis screen on the RD510 locator

With Spectrum Analysis mode activated, you can adjust the Gain and Band Pass Filter options to filter out any unwanted noise from the area of interest. The display shows various responses with bar graphs corresponding to the signal applied to the pulsed water transmitter.

Move parallel to the identified pipe at regular intervals, every 1 to 2 metres, without changing the Gain or Band Pass Filter settings.

As you move along the pipe, the noise will be loudest in the area of the leak. Noise peaks confirmed by high spectral analysis readings allow you to identify areas of a probable leak.

At these areas, switch to Locating mode.

Locating mode

Place the ground microphone to the left of the suspected leak location, at a distance of approximately 1 metre. Click on column 01 to start a measurement.

There are 2 columns:

A thicker column representing the sound beneath the ground surface and a thinner column on the right representing ambient noise. A number (initially red) appears at the top of the column, corresponding to the signal value.

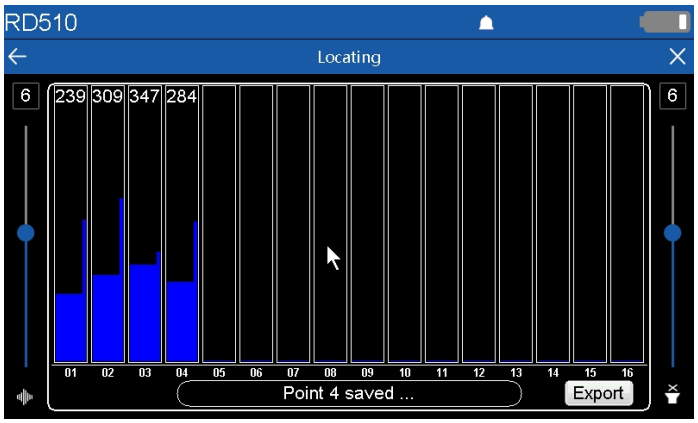

Figure 4.17: Locating screen of the RD510 locator

Wait for the average sound to stabilise, represented by the thick column. This takes a few seconds. Once stabilised, tap the column again and the reading is captured. The signal value at the top of the column changes from red to white.

Move the ground-penetrating microphone sensor to the right, towards the target, and repeat the procedure until you have moved past the probable target.

Several bars will appear, similar to those in the graph above; the water leak will be beneath the tallest, thickest column.

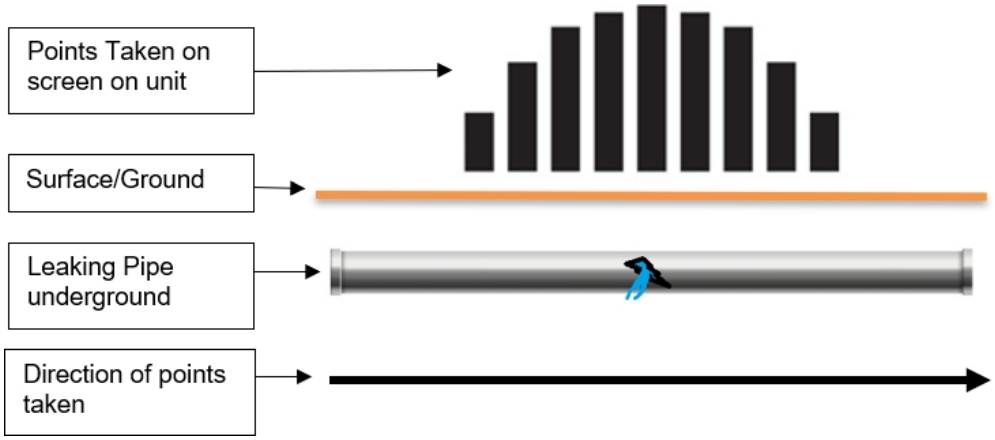

Figure 4.18: Locating mode on the RD510 locator – Water leak

Once the graph is complete, you can export the image by pressing Export. This saves the image to the memory card. You can view these images by connecting the control unit to a PC.

4.5 Audio recording and retrieval of multimedia files

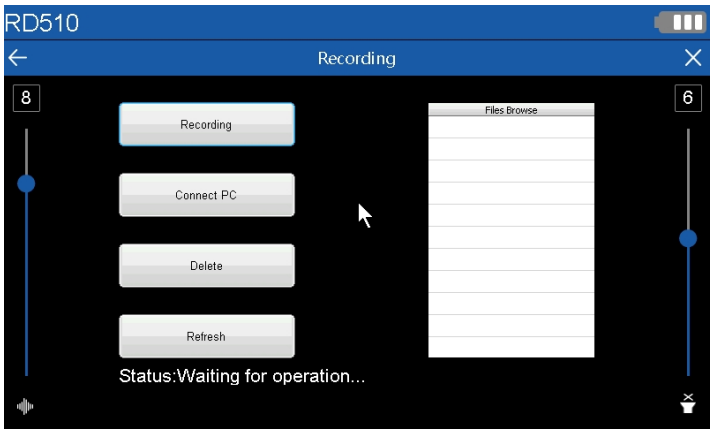

Figure 4.19: Recording screen on the RD510 tracker

NOTE: The Recording function only allows audio recording and requires an SD card to be inserted into the unit.

Audio recording

1. Press Recording to start the audio recording function. During recording, the Spectrum Analysis and Locate screens are not displayed. Before recording, check that the Gain, Bandpass filter and Volume settings are correct.
2. Press **Stop** to stop recording.
3. Press **Refresh** to update the file browser.

Managing media files

Connecting to a PC

1. When the RD510 locator display is switched on, connect the control unit to a PC using the supplied USB-C cable.
2. Press **Connect PC**
3. Using the PC's File Explorer, open the connected RD510 locator control unit.
4. Use the PC's File Explorer to manage the recorded audio files.
5. Select the PicSave folder to manage your image files created on the Locating screen.

Deletion

You can delete images and audio files from the drive in the file list under the 'File Browse' section:

- **For** audio files, select a Wave file from the list and press Delete
- For image files, open the PicSave folder, select the image file and press **Delete**.

- A window will appear confirming the deletion of the file; select OK to delete the file or Cancel to keep the file and go back.

Refresh

After recording an audio file, press **Refresh** to update the list of audio files.

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