RADIODETECTION®

RD5100™S

Multifunction precision cable and pipe locator

User Guide

SPX®

Preface

About this guide

CAUTION: This guide provides basic operating instructions for the RD5100S locator. It also contains important safety information and guidelines and as such should be read in its entirety before attempting to operate the RD5100S locator.

This guide is intended as a quick reference guide only. For detailed instructions, including the use of accessories, please refer to the RD5100S locator operation manual, which is available for download from: **www.radiodetection.com**

Certificates of conformity for the RD5100S locator can be found at: **www.radiodetection.com**

⚠ WARNING: Direct connection to live conductors is POTENTIALLY LETHAL. Direct connections to live conductors should be attempted by fully qualified personnel only using the relevant products that allow connections to energized lines.

⚠ WARNING: The optional transmitter is capable of outputting potentially lethal voltages. Take care when applying signals to any pipe or cable and be sure to notify other technicians who may be working on the line.

⚠ WARNING: Risk of Hearing Loss. The locator emits noise levels which can cause partial or total hearing loss. When using headphones these must have an independent volume control. Set the volume level to its lowest value before donning the headphones.

⚠ WARNING: This equipment is NOT approved for use in areas where hazardous gases may be present.

⚠ WARNING: When using the optional transmitter, switch off the unit and disconnect cables before removing the battery pack.

⚠ WARNING: Batteries can get hot after prolonged use at full output power. Take care while replacing or handling batteries.

3 Year Extended Warranty

The RD5100S locator is covered by a 1 year warranty as standard. Customers can extend their warranty period to a total of 3 years by registering their products within 3 months of purchase.

Visit **https://portal.radiodetection.com/** to create your company portal account, and use the Product page to register your locator or transmitter.

Information on how to create a company account can be obtained from: **https://support.radiodetection.com**

From time to time Radiodetection may release new software to improve the performance or add new functionality to its products. By registering, users will benefit from email alerts advising about new software and special offers related to its product range.

Users can opt-out at any time from receiving software and technical notifications, or just from receiving marketing material by contacting Radiodetection.

eCert

The RD5100S locator is safety equipment which should be regularly checked to ensure its correct operation.

eCert[1] provides a thorough test of the RD5100S's locating circuitry, and supplies a Radiodetection Calibration Certificate when a positive test result is obtained.

Refer to the RD5100 Manager[1] operation manual for further details. Additional purchase may be required.

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1 Contact Radiodetection for eCert and RD5100 Manager availability.

RD5100S locator

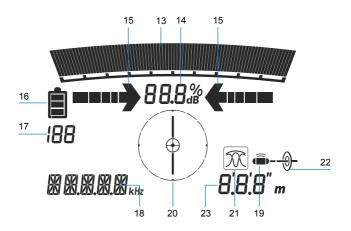1
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Locator features

1. Keypad.
2. LCD with auto backlight.
3. Speaker.
4. Battery compartment.
   (Optional Lithium-Ion battery pack).
5. Accessory connector (Not used).
6. Headphone connector.
7. Mini USB-B port
   (inside battery compartment).

Locator keypad

8. Power key.
9. Up arrow key.
10. Down arrow key.
11. Backlight sensor.
12. Frequency key.

Locator screen icons

13. Signal strength bargraph with peak marker.
14. Signal strength readout.
15. Proportional Guidance arrows.
16. Battery level.
17. Sensitivity readout.
18. Frequency readout.
19. Sonde icon: Indicates that a sonde signal source is selected.
20. Compass: Shows the orientation of the located sonde relative to the locator.
21. Antenna mode icon: Indicates antenna mode selection: Guidance / Peak+.
22. Line icon: Indicates that a line signal source is selected.
23. Depth readout, metric or imperial (configuration dependent).

Keypad actions and shortcuts

Switch the locator on by pressing the power ⏻ key. Once powered up, the keys function as follows:

Locator keys

KEY	● SHORT PRESS	▭ LONG PRESS
⏻	–	Switch power off
ƒ	Switch sonde frequency (options include: 512Hz[i] / 640Hz[i], 8kHz and 33kHz)	Switch between Guidance and Peak+ with guidance arrows
⬆	Set gain to mid position and increases gain in 1dB increments in Peak+ mode.	Rapidly increases gain in 1dB increments in Peak+ mode.
⬇	Set gain to mid position and decreases gain in 1dB increments in Peak+ mode.	Rapidly decreases gain in 1dB increments in Peak+ mode.

Note. [i]Configuration dependent.

Tip. Gain values set for each sonde frequency are stored internally and available when the unit is powered on.

Before you begin

First use

The RD5100S locator can be powered by D-cell alkaline batteries,
D-cell NiMH batteries, or by an accessory Lithium-Ion (Li-Ion) battery pack.

To fit the D cell batteries in the locator, open the battery compartment and insert two D-Cell Alkaline or NiMH batteries, taking care to align the positive (+) and negative (-) terminals as indicated.

Rechargeable battery packs

Lithium-Ion battery packs are available for the locator, providing superior performance over traditional alkaline batteries. To fit these rechargeable packs, follow the instructions provided with each pack.

Checking the system software version and last calibration date

To check which version of software is running on your locator and the date of the last calibration, press and hold the ⓕ key when switching the locator on. This information may be asked for when contacting Radiodetection or your local representative for technical support.
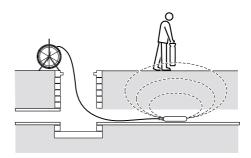
System setup

Regional and operational requirements are factory configured, no set-up is required.

Locating pipes with a sonde

For more detailed descriptions of using the locator, and for detailed sonde locate techniques, refer to the RD5100S Operation Manual.

Make sure the sonde frequency matches the selected locator sonde frequency.

Note: The 'blade' of the locator must be in-line with the central axis of the sonde.
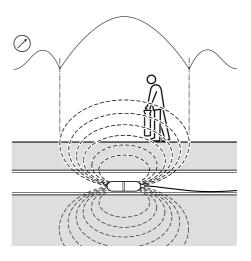
A new battery or a freshly recharged battery should be used at the beginning of each day and preferably at the start of a job. Check that the locator and sonde are working correctly.

A quick test for both sonde and locator is to position the sonde at ground level at a distance equal to its rated depth range from the locator. Point the locator at the sonde with its blade in-line with the sonde, and check that the bar graph on the locator displays more than 50% with the sensitivity of the locator set to maximum.

With the sonde in place at the survey location, hold the locator vertically and directly over the sonde's estimated position. Make sure the blade is in-line with the sonde. Adjust the sensitivity (gain) of the locator to give a bar graph display reading between 60% and 80%.

A sonde radiates a peak radio frequency field from the center of its axis with weaker signal (ghost) lobes at each side. Ghost lobe identification helps to confirm the accuracy of the peak (center) position. Move the locator a little way to one side and then along the axis of the sonde iteratively forwards and backwards to detect the ghost lobes. Reduce the sensitivity of the locator until the ghost lobes are no longer detected.
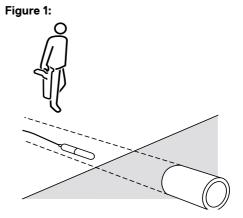
With the locator sensitivity set as desired, propel the sonde along three to four paces and stop.

Place the locator over the estimated position of the sonde:

1. Refer to Figure 1.
   Move the locator backwards and forwards with the blade in-line with the sonde. Stop when the locator display indicates a clear peak response.
2. Refer to Figure 2.
   Rotate the locator as if the blade were a pivot, stop when the display indicates a clear peak response.
3. Refer to Figure 3.
   Move the locator from side to side until the display indicates a clear peak response.
4. Repeat Steps 1 to 3 in smaller increments with the locator blade resting on or near the ground. The locator should now be directly above the sonde with the blade in line with the sonde. Now mark the position.
5. Propel the sonde a further three to four paces along the drain or duct and pinpoint and mark. Repeat this procedure along the route at similar intervals. It should only be necessary to change the locator sensitivity while tracing the sonde if there is a change in the depth of the drain or duct, or the distance between locator and sonde.
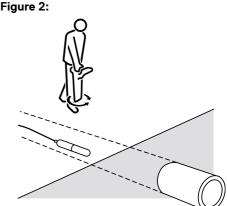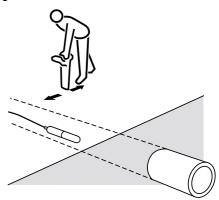
Figure 1:

Figure 2:

Figure 3:

Locate Modes

The RD5100S locator offers a choice of two locate modes for each sonde frequency. These are designed to maximise the effective use of sonde devices for pipe detection.

To switch between locate modes, press and hold the 🅕 key. Modes are described as follows:

GUIDANCE: Proportional arrows and a ballistic 'needle' combine with audio left/right indication for rapidly tracing the general path of a buried utility.

PEAK+: A peak bargraph provides a visual readout of the signal strength with proportional Guidance arrows for rapid line tracing.

Depth and compass readout

⚠️ WARNING: Never use the depth measurement readout as a guide for mechanical or other digging activity. Always follow safe digging guidelines.

The RD5100S locator can measure and display sonde depth and the relative orientation of a sonde to the locator. This helps you to make sure that you are following the right pipe, especially when other utilities are present.

The RD5100S locator features TruDepth™, a feature that helps you to ensure the accuracy of your locates. The depth is automatically removed from the display when the locator is at an angle of more than 7.5° from the path of the pipe being located, or when the locator determines that signal conditions are too poor for reliable measurements.

Using accessories

The RD5100S is compatible with a range of sondes and flexrods. For detailed information on using these accessories please refer to the RD5100S locator operation manual.

Sondes and Flexrods

Sondes are battery powered transmitters that are useful for tracing non-metallic pipes. They can be fixed to Flexrods to allow them to be pushed through pipes or conduits, and some are suitable for blowing through ductwork. The RD5100S can detect a range of sonde frequencies, including those transmitted by flexiprobe™ pushrod systems and flexitrax™ crawlers.

Optional transmitter

For information on using the RD5100S with an optional transmitter, please refer to a Radiodetection precision locator operation manual that covers transmitters.

Training

Radiodetection provides training services for most Radiodetection products. Our qualified instructors will train equipment operators or other personnel at your preferred location or at Radiodetection headquarters. For more information go to: **www.radiodetection.com** or contact your local Radiodetection representative.

Care and maintenance

The RD5100S locator and optional transmitter are robust, durable and weatherproof. However you can extend your equipment's life by following these care and maintenance guidelines.

General

Store the equipment in a clean and dry environment.

Ensure all terminals and connection sockets are clean, free of debris and corrosion and are undamaged.

Do not use this equipment when damaged or faulty.

Batteries and power supply

Only use the rechargeable battery packs, chargers and power supplies approved by Radiodetection.

If not using rechargeable packs, use good quality Alkaline or NiMH batteries only.

Batteries should be disposed of in accordance with your company's work practice, and/or any relevant laws or guidelines in your country.

Cleaning

⚠️ WARNING: Do not attempt to clean this equipment when it is powered or connected to any power source, including batteries, adapters and live cables.

Ensure the equipment is clean and dry whenever possible.

Clean with a soft, moistened cloth. Do not use abrasive materials or chemicals as they may damage the casing, including the reflective labels. Do not use high pressure jets of water to clean the equipment.

If using this equipment in foul water systems or other areas where biological hazards may be present, use an appropriate disinfectant.

Software upgrades

From time to time, Radiodetection may release software upgrades to enhance features and improve performance of the RD5100S locator or optional transmitter. Software upgrades are free of charge and provided through a software manager Personal Computer (PC) application.

E-mail alerts and notification of new software releases are sent to all registered users.

Disassembly

Do not attempt to disassemble this equipment under any circumstances. The locator and optional transmitter contain no user serviceable parts.

Unauthorized disassembly will void the manufacturer's warranty, and may damage the equipment or reduce its performance.

Service and maintenance

Regulary check your equipment for correct operation by using eCert.

The locator and optional transmitter are designed so that they do not require regular recalibration. However, as with all safety equipment, it is recommended that they are serviced and calibrated at least once a year either at Radiodetection or an approved repair center.

NOTE: Service by non-approved service centers may void the manufacturer's warranty.

Details of Radiodetection offices and distribution partners can be found at: **www.radiodetection.com**

Radiodetection products, including this guide, are under continuous development and are subject to change without notice. Go to **www.radiodetection.com** or contact your local Radiodetection representative for the latest information regarding the RD5100S locator or any Radiodetection product.

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