

RADIODETECTION® 

RD7100™

Utility cable and pipe locator range

User guide

Bedienungsanleitung

Gebruikershandleiding

Guía del usuario

Guide d'utilisation

用户指南

Uživatelská příručka

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Preface

About this guide

CAUTION: This guide provides basic operating instructions for the RD7100 locator and transmitter. It also contains important safety information and guidelines and as such should be read in its entirety before attempting to operate the RD7100 locator and transmitter.

This guide is intended as a quick reference guide only. For detailed instructions, including the use of accessories, help with eCert™, CALSafe™ and usage-logging* please refer to the RD7100 locator Operation Manual and RD Manager™ manuals, which are available for download from www.radiodetection.com.

The online User Manual library also contains links to the SurveyCERT+ and RD Manager manuals.

Certificates of conformity for the RD7100 locators and Tx transmitter ranges can be found at www.radiodetection.com.

*Logging and GPS models only

⚠ 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 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! Reduce audio level before using headphones to avoid damaging your hearing.

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

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

⚠ WARNING! The RD7100 locator will detect most buried conductors but there are some objects that do not radiate any detectable signal. The RD7100, or any other electromagnetic locator, cannot detect these objects so proceed with caution. There are also some live cables which the RD7100 will not be able to detect in Power mode. The RD7100 does not indicate whether a signal is from a single cable or from several in close proximity.

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

⚠ WARNING! Only use charging equipment provided by Radiodetection. The use of alternative chargers may cause a safety hazard and/or reduce the life of the battery.

CAUTION: Do not let your battery completely discharge as this may reduce its life or damage it permanently. If you are not using your equipment for a long period do charge them at least once a month.

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

⚠ WARNING! Do not tamper with, or attempt to disassemble the battery packs.

CAUTION: If battery failure is suspected or if the battery shows any sign of discoloration / physical damage return the entire unit to an authorized repair center for investigation and repair. Local, national or IATA transport regulations may restrict the shipment of faulty batteries. Check with your courier for restrictions and best practice guidelines. Your local Radiodetection representative will be able to direct you to our authorized repair centers.

NOTE: The charging temperature range is 0 to 45 °C, 32 to 113°F. Do not attempt to recharge your batteries outside this temperature range.

3 Year Extended Warranty

RD7100 locators and transmitters are 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.

There are 2 ways to register your product:

1. Radiodetection portal

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

Visit <https://support.radiodetection.com> for instructions on how to create a portal account or register your product.

* A valid email address and mobile number are required.

2. Windows Applications

RD Manager™ available from www.radiodetection.com/RDManager.

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 and Self-Test

The RD7100 locator is safety equipment which should be regularly checked to ensure its correct operation.

eCert provides a thorough test of the RD7100's locating circuitry, and supplies a Radiodetection Calibration Certificate when a positive test result is obtained.

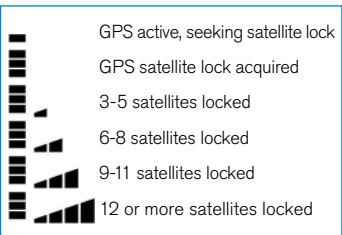
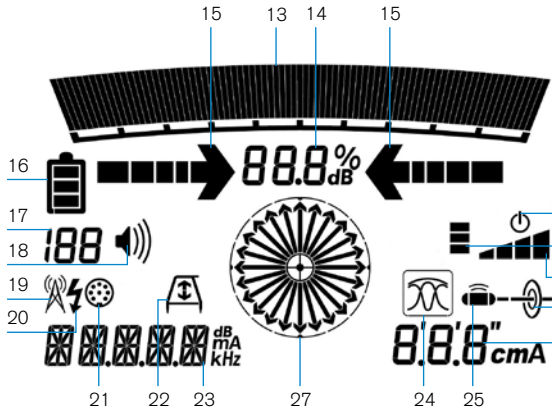
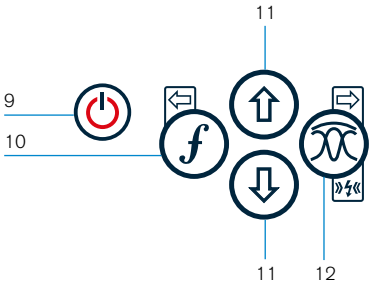
To run an eCert, the locator should be connected to an internet-enabled PC on which the RD Manager software is installed.

Refer to the RD Manager operation manual for further details. Additional purchase may be required.

RD7100 locators incorporate an Enhanced Self-Test feature. In addition to the typical checks for display and power functions, the RD7100 locator applies test signals to its locating circuitry during a Self-Test to check accuracy and performance.

We recommend that a self-test is run at least weekly, or before each use.

RD7 100 locator



Locator features

1. Keypad
2. LCD with auto backlight.
3. Speaker.
4. Battery compartment.
5. Optional Lithium-Ion battery pack.
6. Accessory connector.
7. Headphone connector.
8. USB port
(inside battery compartment).
25. Sonde icon: Indicates that a sonde signal source is selected.
26. Line icon: Indicates that a line signal source is selected.
27. Compass: Shows the orientation of the located cable or sonde relative to the locator.
28. Transmitter standby indicator.
29. Depth readout.

Locator keypad

9. Power key.
10. Frequency key.
11. Up and down arrows.
12. Antenna key.

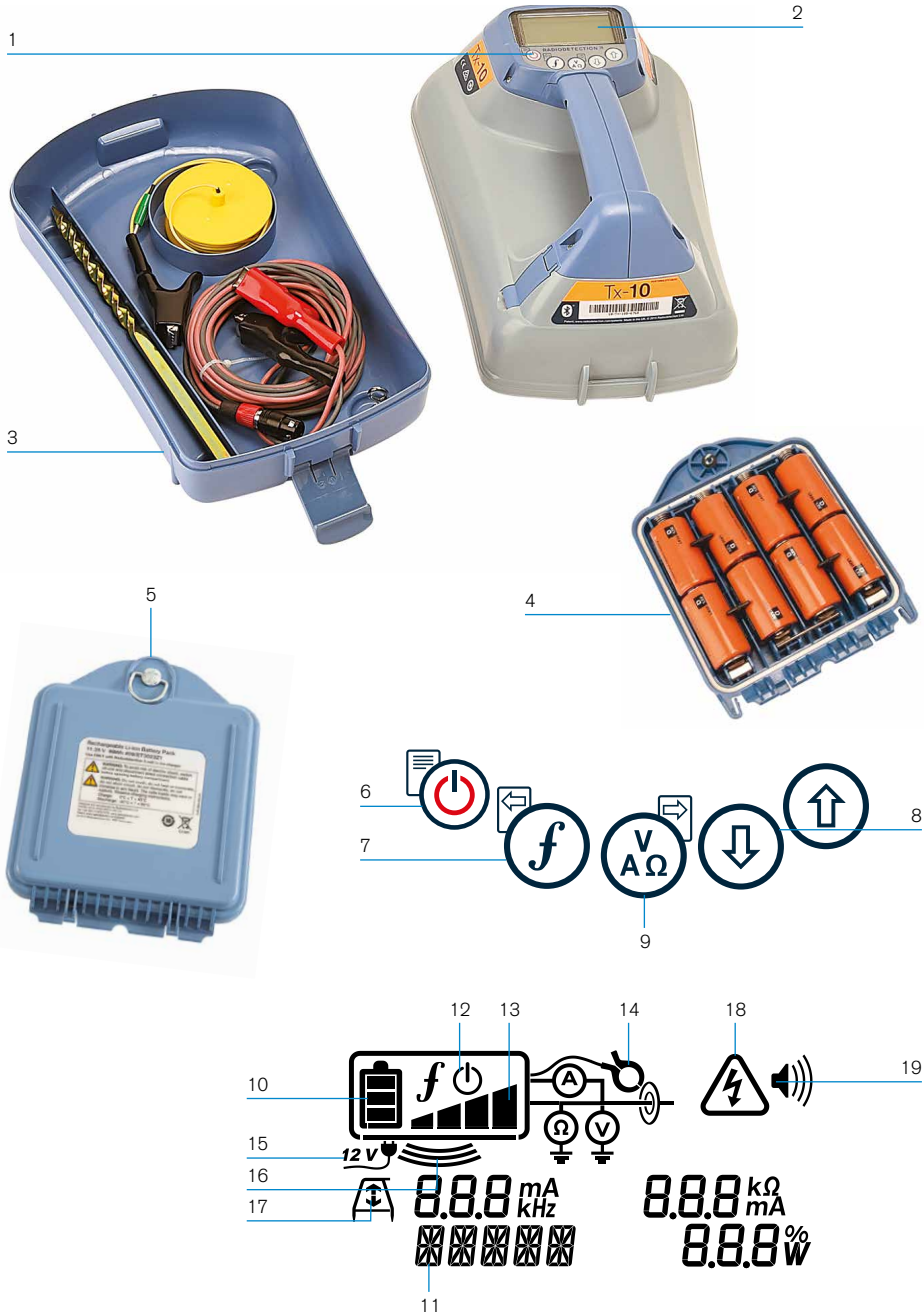
Locator screen icons

13. Signal strength bargraph with peak marker.
14. Signal strength readout.
15. Null / Proportional Guidance arrows.
16. Battery level.
17. Sensitivity readout
18. Volume level.
19. Radio Mode icon.
20. Power Mode icon.
21. Accessory / Measurement icon.
22. A-Frame icon.
23. Frequency / current / menu readout.
24. Antenna modes icon:
Indicates antenna mode selection:
Peak / Peak+™ / Null / Guidance.

GPS equipped locators only:

30. GPS Status.
31. GPS Signal quality.

Tx-1, Tx-5 and Tx-10 transmitters



Transmitter features

1. Keypad.
2. LCD.
3. Removable accessory tray.
4. D-cell battery tray.
5. Optional Lithium-Ion battery pack.

Transmitter keypad


6. Power key.
7. Frequency key.
8. Up and down arrows.
9. Measure key.

Transmitter screen icons






10. Battery level indicator.
11. Operation mode readout.
12. Standby icon.
13. Output level indicator.
14. Clamp icon: Indicates when a signal clamp or other accessory is connected.
15. DC Power connected indicator.
16. Induction mode indicator.
17. A-Frame: Indicates when the transmitter is in Fault-Find Mode.
18. Voltage warning indicator: Indicates that the transmitter is outputting potentially hazardous voltage levels.
19. Volume level indicator.










Keypad actions and shortcuts



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

Locator keys

KEY	● SHORT PRESS	▬ LONG PRESS
	Enter the menu.	Switch power off.
	Scroll through locate frequencies from low to high.	-
	<p>When using active frequencies: Toggles Peak, Peak+, Null, and Guidance antenna modes.</p> <p>PL & PLG models in Power Mode: Scrolls through Power Filters™ for improved discrimination of parallel or strong power signals.</p>	In Peak+ antenna mode: Switch between Guidance and Null arrows.
 and 	Increase and decrease gain. RD7100 automatically sets gain to mid-point when pressed.	Rapidly increase and decrease gain steps in 1dB increments.

Transmitter keys

KEY	● SHORT PRESS	▬ LONG PRESS
	Enter the menu.	Switch Power off.
	Scroll through locate frequencies from low to high.	-
	Take voltage and impedance measurements using the currently selected frequency.	Take voltage and impedance measurements at a standardized frequency.
 and 	Adjusts the output signal.	Select standby  / maximum standard power  .

Tip: to scroll through frequencies from high to low, hold  while pressing the  button (applies to both locators and transmitters).

Before you begin

IMPORTANT!

This guide is intended to be a quick reference guide. We recommend you read the full operation manual before you attempt to operate the RD7100 locator.

First use

The RD7100 locators and transmitters 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.


To fit the D cell batteries in the transmitter, unlatch the accessory tray. The battery compartment is located underneath the transmitter body. Use the turnkey to unlatch the battery compartment. Insert eight D-Cell Alkaline or NiMH batteries, taking care to align the positive (+) and negative (-) terminals as indicated.

Alternatively, you can power the transmitter from a mains or vehicle power source using a Radiodetection supplied optional accessory adapter.

Rechargeable battery packs

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

Checking your system software version

If you wish to check which version of software is running on your locator, 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.





Transmitters automatically show their software version on startup.

System setup









It is important that you set up the system according to regional / operational requirements and your personal preferences before you conduct your first survey. You can set the system up using the menus as described below.

Setting up your system

The RD7100 locator and transmitter menus allow you to select or change system options. Once entered, the menu is navigated using the arrow keys. Navigation is consistent on both the transmitter and the locator. When in the menu, most on-screen icons will temporarily disappear and the menu options will appear in the bottom left-hand corner of the display. The right arrow enters a submenu and the left arrow returns to the previous menu.

Note that when browsing the locator menu, the  and  keys act as left and right arrows. When browsing the transmitter menu, the  and  keys act as left and right arrows.

To navigate menus:

1. Press the  key to enter the menu.
2. Use the  or  keys to scroll through the menu options.
3. Press the  key to enter the option's submenu.
4. Use the  or  keys to scroll through the submenu options.
5. Press the  key to confirm a selection and return to the previous menu.
6. Press the  key to return to the main operation screen.

NOTE: When you select an option and press the  key, the option will be enabled automatically.

Locator menu options

- VOL: Adjust the speaker volume from 0 (mute) to 3 (loudest).
- GPS: Enable or disable the internal GPS module and enable/disable SBAS GPS augmentation (GPS models only).
- UNITS: Select metric or imperial units.
- INFO: Run a Self-Test, display the date of the most recent service recalibration (M CAL) or the most recent eCert calibration.
- LANG: Select menu language.
- POWER: Select local power network frequency: 50 or 60Hz.
- ANT: Enable or disable any antenna mode with the exception of Peak.
- FREQ: Enable or disable individual frequencies.
- ALERT: Enable or disable StrikeAlert™.
- BATT: Set battery type: Alkaline or NiMH. Li-Ion auto-selects when connected.
- ARROW: Select Null or proportional Guidance arrows in Peak+ mode
- COMP: Enable or disable display of the Compass feature.

Transmitter menu options








- VOL: Adjust the speaker volume from 0 (mute) to 3 (loudest).
- FREQ: Enable or disable individual frequencies.
- BOOST: Boost transmitter output for a specified period of time (in minutes).
- LANG: Select menu language.
- OPT F: Run SideStep^{auto}™ to auto-select a locate frequency for the connected utility.
- BATT: Set battery type: ALK, NiMH or Li-Ion and enable / disable Eco mode.
- MAX P: Set the transmitter to output its maximum wattage.

- MODEL: Match the transmitter setting to the model of your locator.
- MAX V: Set the output voltage to maximum (90V).

Examples of using the menu, selecting options and making changes:

Locator mains power frequency







To select the correct frequency (50 or 60Hz) for your country or region's power supply:

1. Press the  key to enter the menu.
2. Scroll to the POWER menu using the  or  keys.
3. Press the  key to enter the POWER menu.
4. Use the  or  keys to select the correct mains frequency.
5. Press the  key twice to accept your selection and return to the main operation screen.

Batteries











It is important to set the system to match the currently installed battery type to ensure optimal performance and correct battery level indication.

To set your battery type:

1. Press the  key to enter the menu.
2. Scroll to the BATT menu using the  or  arrows.
3. Press the  key (locator) or the  key (transmitter) to enter the BATT menu.
4. Scroll up or down to select the correct battery type (Alkaline, Nickel-metal Hydride or Lithium-Ion). Lithium-Ion is automatically selected when a Li-Ion pack is connected to a locator.
5. Press the  key twice to accept your selection and return to the main operation screen.

Transmitter Eco Mode

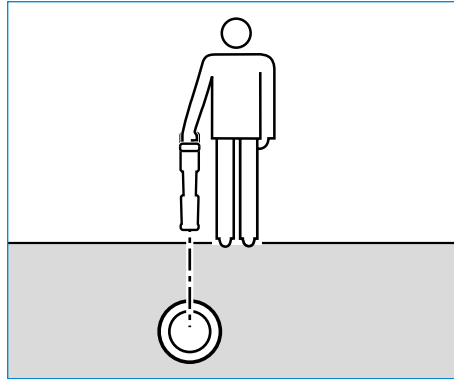
When using alkaline batteries, Eco mode can be selected to maximize run time. When Eco mode is selected the transmitter automatically reduces its maximum power output as battery levels run low. Eco mode is switched off by default. To Enable Eco Mode:

1. Press the  key to enter the menu.
2. Scroll to the BATT menu using the  or  arrows.
3. Press the  key to enter the BATT menu.
4. Select the ALK Battery type using the  or  arrows.
5. Press the  key to enter the ECO sub menu
6. Select ECO using the  or  arrows.
7. Press the  key three times to accept your selection and return to the main operation screen.

Locating pipes and cables










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

The RD7100 locator is designed to operate with the 'blade' of the locator perpendicular to the path of the cable or pipe being located.








Running a Self-Test

We recommend that a Self-Test is run at least weekly, or before each use. As the Self-Test tests the integrity of the locate circuitry, it is important that it is carried out away from larger metallic object such as vehicles, or strong electrical signals. To run a Self-Test:

1. Press the  key to enter the menu.
2. Scroll to the INFO menu using the  or  arrows.
3. Press the  key to enter the INFO menu.
4. Select TEST using the  or  arrows.
5. Press the  key to select YES
6. Press the  key to begin the Self-Test
7. Once the Self-Test is completed, the result (PASS or FAIL) will be displayed.
8. Restart the locator using the  key

SideStepauto™

The transmitter can be used to recommend a general-purpose locate frequency for the intended locate task by measuring the impedance of the target cable or pipe. To run SideStepauto™, connect the transmitter to the target utility, then:

1. Press the  key to enter the menu.
2. Scroll to the OPT F menu using the  or  arrows.
3. Press the  key to select 'START'.
4. Press the  key to start the test. The transmitter will automatically select a general purpose frequency for use on the connected utility.

Locating with Active Frequencies

Active frequencies are applied to the target pipe or cable using the transmitter, and provide the most effective way of tracing buried pipes or cables.

Generally speaking, it is better to use a low frequency on larger, low impedance utilities, and move to a higher frequency on smaller, high impedance utilities.


The lowest power setting required to trace the target utility should always be used to minimize the risk of false trails.

The transmitter can apply a signal using three different methods:

Direct connection

In direct connection, you connect the transmitter directly to the pipe or cable you wish to survey using the red Direct Connect lead supplied. The black lead is generally connected to earth using the supplied ground stake.

The transmitter will then apply a discrete signal to the line, which you can trace using the locator. This method provides the best signal on an individual line and enables the use of lower frequencies, which can be traced for longer distances.

 **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.**

Induction

The transmitter is placed on the ground over or near the survey area. You select the appropriate frequency. The transmitter will then induce the signal indiscriminately to any nearby metallic conductor. In induction mode, using higher frequencies is generally recommended as they are induced more easily onto nearby conductors.

Transmitter Clamp

An optional signal clamp can be placed around an insulated live wire or pipe up to 8.5" / 215mm in diameter to transfer the transmitter signal to the utility. This method of applying the transmitter signal is particularly useful on insulated live wires and removes the need to disconnect the supply to the cable.

 **WARNING! Do not clamp around uninsulated live conductors.**


 **WARNING! Before applying or removing the clamp around a power cable ensure that the clamp is connected to the transmitter at all times.**

Locating with Passive Frequencies

Passive frequency detection takes advantage of signals that are already present on buried metallic conductors. The RD7100 supports up to three types of passive frequencies: Power, Radio and CPS* signals. You can detect these frequencies without the aid of the transmitter.

*Model specific.


Power Filters

RD7100PL and PLG locators allows operators to take advantage of the harmonic signals found on power networks. Once in Power Mode, press the  key to switch out of Radiodetection's sensitive Power Mode and scroll through five individual Power Filters. This enables operators to establish if a single large power signal comes from one source or from the presence of multiple cables. The different harmonic characteristics of the detected lines can then be used to trace and mark their route.

Additionally the use of an individual harmonic can allow you to locate power lines in situations where the total signal would otherwise be too large.

Locate Modes


Dependent on the model selected, the RD7100 offers a choice of up to 4 locate modes, each of which is designed for specific uses, depending on what task is being carried out.

To scroll between locate modes, press the  key.



PEAK: For accurate locating, the peak bargraph provides a visual readout of the signal strength. The peak signal is found directly over the buried utility.



PEAK+: Choose to combine the accuracy of the Peak bargraph with Null arrows, which can indicate the presence of distortion, or with proportional Guidance arrows for rapid line tracing – switch between them by holding the  key.




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



NULL: Provides a quick left / right indication of the path of a utility. As Null is susceptible to interference, it is best used in areas where no other utilities are present.

Depth, current and compass readouts

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

The RD7100 locator can measure and display the utility depth, locate signal current and the relative orientation of the cable or pipe to the locator. This helps you to make sure that you are following the right cable or pipe, especially when other utilities are present.

The RD7100 locator features TruDepth™, a feature that helps you to ensure the accuracy of your locates. The depth and current are automatically removed from the display when the locator is at an angle of more than 7.5° from the path of the cable or pipe being located, or when the locator determines that signal conditions are too poor for reliable measurements.


Using accessories

The locator and transmitter are compatible with a wide range of accessories. For detailed information on using any of the accessories below please refer to the RD7100 locator operation manual.

Transmitter signal clamps

When it is not possible to connect directly onto a pipe or cable, or induction mode is unsuitable, a transmitter signal clamp may be used. The clamp is plugged into the output of the transmitter and provides a means of applying a locate signal to an insulated live wire. This is particularly useful with live insulated cables as it removes the need to disable the power and break the line.

 **WARNING! Do not clamp around uninsulated live conductors.**

 **WARNING! Before applying or removing the clamp around a power cable ensure that the clamp is connected to the transmitter at all times.**

To locate or identify individual lines a locator signal clamp can be connected to the accessory socket of the locator and can be clamped around individual pipes or cables.

Stethoscopes and locator signal clamps

Locator clamps can be used to identify a target cable or pipe amongst a number of different cables by checking for the strongest locate signal. When cables are bunched or tightly packed, a stethoscope antenna can be used in place of a clamp.

To use a stethoscope or locator signal clamp, connect it to the locator's accessory socket. The locator will automatically detect the device and filter out location modes that are irrelevant.

Sondes, Flexrods and FlexiTrace

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. Some models of the RD7100 can detect a range of sonde frequencies, including those transmitted by flexiprobe™ P540c pushrod systems and P550c flexitrac™ crawlers.

For a detailed guide on locating sondes, please refer to the operation manual.

A FlexiTrace is a traceable fiberglass rod incorporating wire conductors with a sonde at the end. It is connected to the output of the transmitter and is typically used in small diameter, non-metallic pipes. The user has the option of locating the entire length of the cable or choosing to locate only the tip of the cable.

The FlexiTrace has a maximum power rating of 1W. When using the FlexiTrace with a Radiodetection Tx-5 or Tx-10 transmitter, the output limit must be set to 1W in the MAX P menu and the output voltage limit set to LOW in the MAX V menu.

No additional settings are required for the Tx-1 transmitter.

Fault-finding with an A-Frame

The RD7100PL, PLG, TL and TLG models have the ability to detect cable or pipe insulation faults accurately using an A-Frame accessory. The Tx-5 and Tx-10 transmitters provide fault finding signals that can be detected by the A-Frame as a result of the signal bleeding to ground through damaged cable sheaths.

The Transmitter's multimeter function can be used to measure the impedance of the connected pipe or cable in order to characterize the fault.

For a detailed guide to fault-finding, please refer to the operation manual.

Plug / Live cable connector

The plug connector is connected to the output of the transmitter and is used to put a signal onto a line and trace it from a domestic mains plug to the service cable in the street.

The live cable connector can be used to apply a signal to a live cable. Only suitably qualified personnel should use this equipment.

Submersible antenna

This antenna is connected to the locator and used to locate pipes and cables underwater at depths of up to 300 feet / 100 meters.

 **WARNING: use of the submersible antenna should be by fully licensed and experienced personnel only, and only after fully reading the operation manual!**

RD Manager PC Software

RD Manager is the RD7100 locator system PC companion, and it allows you to manage and customize your locator. RD Manager is also used to retrieve and analyze survey and usage data, run an eCert calibration, and to perform software upgrades.

You can use RD Manager to register your products to obtain an extended warranty, setup your locator by performing a number of maintenance tasks such as adjusting date and time, activating and de-activating active frequencies, or by setting-up functions like CALSafe or StrikeAlert.

RD Manager is compatible with PCs running Microsoft Windows 64 bit operating system. To download RD Manager, go to www.radiodetection.com/RDManager.

If you do not have internet access, or wish to receive RD manager on a CD-ROM, contact your local Radiodetection office or representative.

For more information about RD Manager refer to the RD Manager operation manual.

Automatic Usage-Logging

RD7100 locator models equipped with GPS offer a powerful data logging system which records all the instrument's critical parameters (including GPS position, if available) and warnings in its internal memory every second.

The automatic logging system is always active and cannot be disabled. The locator's memory is capable of storing over 500 days of usage data, when used for 8 hours per day.

Logs can be retrieved using the RD Manager PC application for usage analysis and survey validation. Refer to the RD Manager operation manual for further information.

GPS

The RD7100 locator can use an internal GPS module (GPS models only) to be able to detect and store its latitude, longitude and accurate UTC time alongside its location data. This positional information is then appended to the automatic usage-logging system.

The presence of GPS data allows for the data to be mapped easily and to export and save the information directly into GIS systems.

GPS menu settings

There are 5 options in the GPS menu:

- **INT:** Select this to use the internal GPS if present.
- **OFF:** Select this to switch off the internal GPS module and save battery.
- **SBAS:** Set SBAS (Satellite-based augmentation systems) mode to improve GPS accuracy. When ON the GPS system will take longer to lock.
- **RESET:** Select YES to reset the internal GPS (GPS models only).

CALSafe

GPS equipped RD7100 locators models are equipped with a system which can be enabled to force them to shut down once they are beyond the expected service / calibration date.

When the unit is within 30 days of the service due date the unit will display at startup the number of days left. The locator will stop functioning on the service due date.

CALSafe is disabled by default. You can enable the CALSafe feature and edit the CALSafe service / calibration due date using the RD Manager PC software. Refer to the RD Manager operation manual for further information.

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 RD7100 locator and 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 RD7100 locator or transmitter. Software upgrades are free of charge and provided through the RD Manager PC software

E-mail alerts and notification of new software releases are sent to all registered users. You can also check if your products are up-to-date or upgrade them by using the RD Manager software upgrade screen.

NOTE: To upgrade your product's software you need to have created an account using RD Manager and have a live internet connection. An optional Radiodetection power supply may be required to update your transmitter software.

Disassembly

Do not attempt to disassemble this equipment under any circumstances. The locator and 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

Regularly check your equipment for correct operation by using the Self-Test function and eCert.

The locator and 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 RD7100 locator or any Radiodetection product.

序言

关于本指南

注意：本指南提供了RD7100定位仪与发射机的基本操作说明。本指南中还包含重要的安全信息和指导说明，在操作RD7100定位仪与发射机前应完整阅读本指南。

本指南仅用作快速参考指南。有关详细说明，包括配件的使用、eCert™, CALSafe™以及使用记录的帮助*，请参考RD7100定位仪操作手册和RD Manager™操作手册，可从www.radiodetection.com下载上述内容。

在线用户手册库还包含SurveyCERT+以及RD Manager操作手册的链接。

RD7100定位仪和Tx发射机系列的合格证书请见www.radiodetection.com。

*仅限记录和 GPS 型号产品。

⚠ 警告！ 和带电导体直连可能具有致命危险。与带电导体的直连仅可由具有充分资质的人员操作，并仅使用允许和通电路径连接的相关产品。

⚠ 警告！ 发射机能输出具有可致命的电压。将信号施加于管道或线缆时应注意，要确保通知可能在线路上工作的其他技术人员。

⚠ 警告！ 使用耳机前，应降低音量，避免损伤您的听力。

⚠ 警告！ 在可能存在有害气体的区域不得使用本设备。

⚠ 警告！ 如要移除电池，应先关闭发射机，然后断开线缆连接。

⚠ 警告！ RD7100定位仪可探测到大部分埋设导体，但有部分物体并不发射出任何可探测的信号。由于RD7100或任何其它电磁定位仪无法探测到这些物体，因此在操作时要小心谨慎。还存在一些RD7100在电力模式无法探测到的带电线缆。RD7100无法表明一个信号是来自单根线缆还是来自紧密靠近的若干线缆。

⚠ 警告！ 在全功率输出下长时间使用后，电池可能变热。在更换或处理电池时要小心谨慎。

⚠ 警告！ 只能使用雷迪所提供的充电设备。使用替代充电器可能会引发安全隐患和/或减短电池寿命。

小心： 请勿用尽电池电量，因为这样可能会减短电池寿命或对电池造成永久性损坏。如果您长期不使用设备，至少每月为其充一次电。

⚠ 警告！ 请勿乱改或尝试拆开电池组。

小心： 如果电池疑似出现故障，或如果电池出现变色/物理损坏，则将整个装置返回至授权维修中心进行检修。地方、国家或 IATA 运输法规规定限制运输故障电池。请向快递公司咨询限制条件和最佳实践指南。您当地的雷迪代表会引导您前往授权维修中心。

注意： 充电温度范围为 0 至 45 °C，32 至 113°F。请勿尝试在温度超限的情况下为电池充电

三年延长质保

RD7100定位仪和发射机的标准质保期为一年。顾客可以在购买产品后3个月内，通过产品注册将质保期延长至三年。

可通过以下 2 种方式注册产品：

1.雷迪门户网站

请访问 <https://portal.radiodetection.com>创建门户网站账户*并在产品页注册您的定位仪和发射机。

请访问<https://support.radiodetection.com> 了解如何创建门户网站账户或注册产品相关说明。

*需要提供有效邮箱地址和手机号码。

2.Windows 应用程序

可从www.radiodetection.com/RDManager下载 RD Manager™

英国雷迪公司可能会不时发布新的软件，以提升其产品的性能或增加新功能。通过产品注册，用户可获得电邮订阅提醒，及时了解与其产品系列相关的新软件和特别优惠及服务。

用户可以随时选择停止接收软件和技术通知，或通过联系英国雷迪公司选择停止接收营销材料。

eCert与自检

RD7100定位仪是一种安全设备，应定期进行检查，确保其正常运行。

eCert可对RD7100定位电路进行全面测试，如果测试结果合格，将提供英国雷迪标定证明。

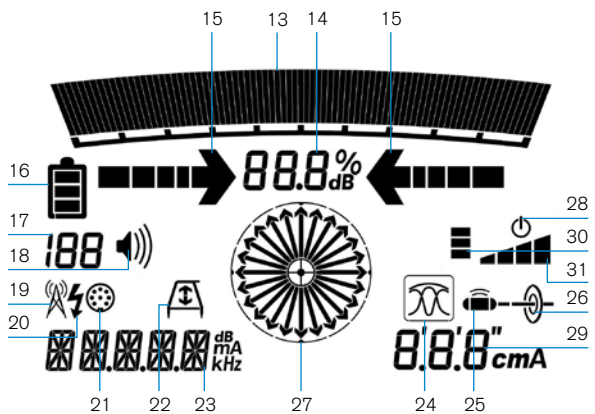
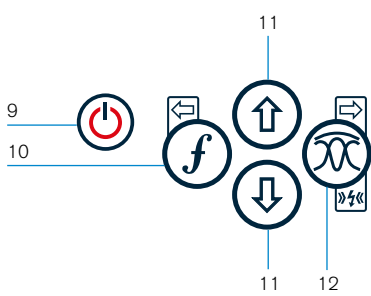
要运行eCert，应将定位仪与连网的电脑相连，且该电脑上已安装RD Manager软件。

有关更多信息，请参考RD Manager操作手册。该软件可能需要另外购买。

RD7100定位仪具有增强自检功能。除了对屏显与电源功能的必要检测外，RD7100在自检中还会将信号施加在定位电路上，以检查设备精度和性能。

建议至少每周或每次使用之前对设备进行一次自检。

RD7100 定位仪



	GPS启动, 寻找卫星锁定
	已获取GPS卫星锁定
	3-5颗卫星探测到
	6-8颗卫星探测到
	9-11颗卫星探测到
	12颗或更多颗卫星探测到

定位仪功能

1. 键盘
2. 含自动背光的LCD显示屏
3. 扬声器
4. 电池盒
5. 可选锂电池组
6. 配件连接器
7. 耳机连接器
8. USB端口（位于电池盒内部）

定位仪键盘

9. 电源键
10. 频率键
11. 上下箭头
12. 天线键

定位仪屏幕图标

13. 带峰值标识的信号强度图表
14. 信号强度读数
15. 谷值/比例导向箭头
16. 电量图标
17. 灵敏度读数
18. 音量图标
19. 无线电模式
20. 电源模式
21. 配件/测量图标
22. A型架图标
23. 频率/电流/菜单读数

24. 天线模式图标：

表示天线模式选择：

峰盘/峰值+/谷值/导向

25. 探头图标：表示已经选定一个探头信号源。

26. 管线图标：表示已经选定一个管线信号源。

27. 罗盘：表示定位管线或探头与定位仪的相对方向。

28. 发射机待机指示器

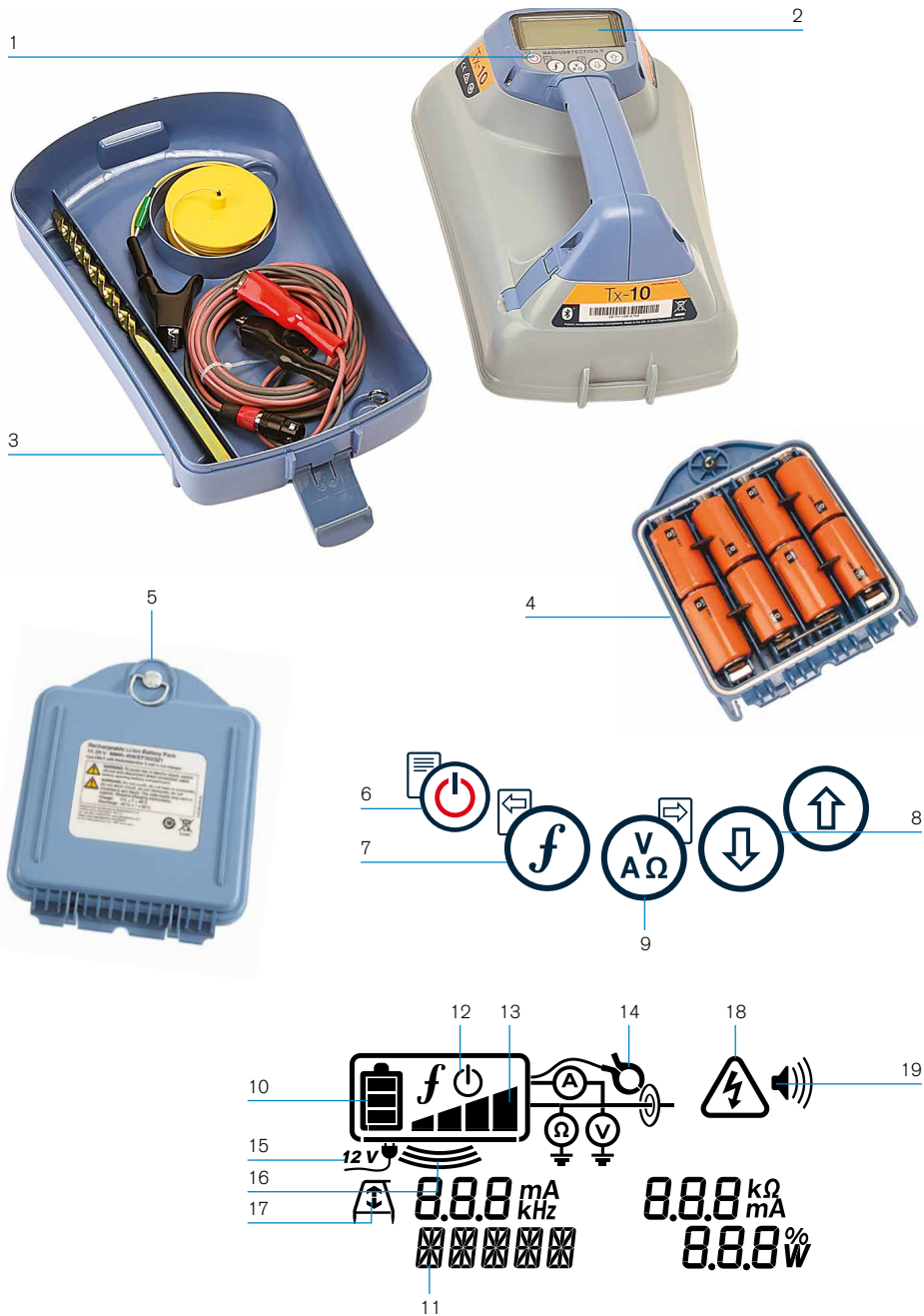
29. 深度读数

仅限带GPS功能的定位仪：

30. GPS状态图标

31. GPS信号质量图标

Tx-1, Tx-5和Tx-10发射机



发射机功能

1. 键盘
2. LCD显示屏
3. 可拆卸配件盒
4. 1号电池盒
5. 可选锂电池组

发射机键盘


6. 电源键
7. 频率键
8. 上下箭头
9. 测量键

发射机屏幕图标


10. 电池电量图标
11. 操作模式读数
12. 待机图标
13. 输出电压水平指示器
14. 夹钳图标：表示已连接信号夹钳或其它配件。
15. 直流电源连接指示器
16. 感应模式指示器
17. A型图标：表示发射机处于故障查找模式。
18. 电压警告指示器：表示发射机的电压水平具有潜在危险性。
19. 音量图标



键盘操作和快捷键

按下  键打开定位仪或发射机。一旦接通电源，按键功能如下：

定位仪按键

按键	● 短按	▬ 长按
	进入菜单。	关闭电源。
	滚动选择定位频率高低。	-
	使用有源频率时： 切换峰值、峰值+、谷值和导向天线模式。 PL & PLG型号在电力模式下： 滚动电力信号滤波器™以提高对于平行或强电力信号的区分效果。	峰值+天线模式： 在导向和谷值箭头间切换。
	增加和减少增益。按下按键时RD7100自动将增益设置为中间值。	以1dB的增量幅度快速增加和减少增益。

发射机按键

按键	● 短按	▬ 长按
	进入菜单。	关闭电源。
	滚动选择定位频率高低。	-
	利用当前设定的频率测量电压和阻抗。	在标准频率下测量电压和阻抗。
	调整输出信号。	选择待机  /最大标准电力  。

提示：从高到底滚动选择频率时，同时按下  和  按钮（定位仪和发射机均适用）。

在您开始操作之前

请注意!

本指南仅作为快速参考指南使用。我们建议您在操作RD7100定位仪前，先阅读完整的操作手册。

首次使用

RD7100定位仪和发射机可由1号碱性电池、1号镍氢电池或可选配件锂电池组进行供电。

如需在定位仪内装入1号电池，请打开电池盒，插入两个碱性或镍氢电池，注意按照指示将电池对准正极 (+) 和负极 (-) 两端。


如需在发射机内装入1号电池，请打开配件盒。电池盒位于发射机机体的下方。用钥匙打开电池盒。插入八个1号碱性电池或镍氢电池，注意按照指示将电池对准正极 (+) 和负极 (-) 两端。

此外，您还可以使用由英国雷迪提供的可选配件适配器从总线或车辆电源对发射机供电。

可充电电池组

定位仪和发射机均可使用锂电池组进行供电，相对于传统碱性电池，锂电池组性能更佳。如需安装这些可充电电池组，请遵照各电池组提供的指示说明。

检测系统软件版本

如需检测定位仪上运行的软件版本，请打开定位仪并按住  键。还可在联系英国雷迪或您当地的技术支持代表时询问版本信息。





发射机在启动时会自动显示其软件版本。

系统设置









进行首次操作之前，您可以根据区域/操作要求和您的个人偏好来设置系统，这一点很重要。您可以使用下面的菜单来设置系统。

设置您的系统

通过RD7100定位仪和发射机菜单，您可以选择或更改系统选项。进入菜单后，会有箭头键来导航菜单。发射机和定位仪上的导航是一样的。在菜单中，屏幕上的大部分图标会暂时消失，在显示屏左下角会出现菜单选项。点击右箭头，将进入子菜单，点击左箭头则会返回到上一级菜单。

请注意，在浏览定位仪菜单时  和  键将作为左右箭头使用。当浏览发射机菜单时， 和  键将作为左右箭头使用。

导航菜单：

1. 按下  键进入菜单。
2. 使用  或  键在菜单选项中滚动。
3. 按下  键进入选项的子菜单。
4. 使用  或  键在子菜单选项中滚动。
5. 按下  键确认选择并返回上一个菜单。
6. 按下  键返回主操作屏幕。

注意：当您选择某一选项，并按下  键时，将自动启用该选项。

定位仪菜单选项

- VOL: 在0（静音）和3（最高）之间调节扬声器的音量。
- GPS: 启用或禁用内部GPS模块，并且启用/禁用SBAS GPS增强（仅限GPS型号）。
- UNITS: 选择公制或英制。
- INFO: 进行自检、显示最近重新标定（M CAL）或最近eCert标定的日期。
- LANG: 选择菜单语言。
- POWER: 选择本地电力网络频率：50或60Hz。
- ANT: 启用或禁用任何天线模式，峰值模式除外。
- FREQ: 启用或禁用单个频率。
- ALERT: 启用或禁用StrikeAlert™。
- BATT: 设置电池类型：碱性电池或镍氢电池。锂电池一旦连接会自动选择。
- ARROW: 在峰值+模式中选择谷值或比例导向箭头。
- COMP: 启用或禁用罗盘功能的显示。

发射机菜单选项








- VOL: 在0（静音）和3（最高）之间调节扬声器的音量。
- FREQ: 启用或禁用单个频率。
- BOOST: 在规定的时间内（按分钟记）增强发射机的输出功率。
- LANG: 选择菜单语言。
- OPT F: 运行SideStep^{auto}™，自动选择所连接公用设施的定位频率。
- BATT: 设置电池类型：碱性电池、镍氢电池或锂电池，并且启用/禁用Eco模式。
- MAX P: 设定发射机最大输出功率。

- MODEL: 设定发射机, 使其与您的定位仪型号相匹配。
- MAX V: 将输出电压设定为最大值90V。

菜单使用、选项选择以及更改操作示例:

定位仪主电源频率







请选择您所在国家或地区合适的电源频率 (50或60Hz) :

1. 按下  键进入菜单。
2. 使用  或  键滚动至电源菜单。
3. 按下  键进入电源菜单。
4. 使用  或  键选择合适的电源频率。
5. 按两次  键以确认您的选择, 然后返回到主操作屏幕。

电池











应使系统的设置与当前安装的电池类型相匹配, 确保设备最佳性能和正确的电量显示, 这一点很重要。

若要设置您的电池类型, 请按照以下步骤操作:

1. 按下  键进入菜单。
2. 使用  或  键滚动至BATT菜单。
3. 按下定位仪上的  键或发射机上的  键进入BATT菜单。
4. 向上或向下滚动, 选择正确的电池类型 (碱性电池、镍氢电池或锂电池)。
锂电池组与定位仪一旦连接则会自动选择锂电池。
5. 按两次  键以确认您的选择, 然后返回到主操作屏幕。

发射机Eco模式

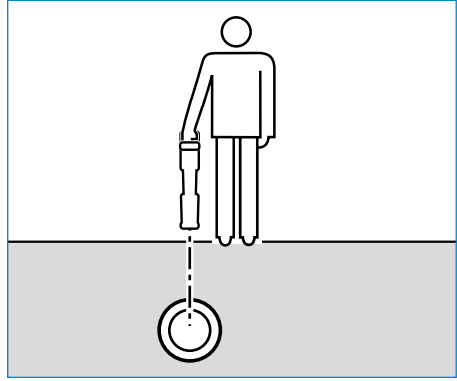
使用碱性电池时, 可以选择Eco模式来提高电池的使用时间。选择Eco模式时, 当电池不能再提供足够电力时, 发射机会自动降低其最大输出功率。环保模式默认为关闭。若要启用环保模式, 请按照以下步骤操作:

1. 按下  键进入菜单。
2. 使用  或  键滚动至BATT菜单。
3. 按下  键进入BATT菜单。
4. 使用  或  箭头选择碱性电池类型。
5. 按下  键进入ECO子菜单。
6. 使用  或  箭头选择ECO。
7. 按三次  键以确认您的选择, 然后返回到主操作屏幕。

定位管道和线缆










如欲了解更多有关定位仪和发射机的使用说明以及详细的定位技术信息，请参考操作手册。

RD7100定位仪主要运用定位仪‘叶片’，使其垂直于被定位的线缆或管道进行工作。








运行自检

建议至少每周或每次使用之前对设备进行一次自检，自检主要检测定位电路的完好性，因此自检时应远离大型金属物体，例如车辆或强电力信号，这一点尤为重要。若要运行自检功能，请按照以下步骤操作：

1. 按下  键进入菜单。
2. 使用  或  键滚动至INFO菜单。
3. 按下  键进入INFO菜单。
4. 使用  或  箭头选择TEST。
5. 按下  键选择“YES”。
6. 按下  开始自检。
7. 一旦完成自检，结果（通过或失败）将显示在屏幕上。
8. 使用  键重新启动定位仪。

SideStep^{auto}TM

通过测量目标线缆或管道的阻抗，发射机可为定位任务提供通用定位频率。如要运行SideStep^{auto}TM，请将发射机连接到目标公用设施，然后按照以下步骤操作：

1. 按下  键进入菜单。
2. 使用  或  键滚动至OPTF菜单。
3. 按下  键选择“START”。
4. 按下  键启动检测功能。发射机将自动为所连接的公用设施选择通用频率。

有源频率定位

通过发射机直接将有源频率施加于目标管道或线缆，这是追踪埋设管道或线缆最有效的方法。

一般来说，在大型低阻抗公用设施上最好使用低频，而在较小的高阻抗公用设施上使用高频。

请务必使用最低功率追踪目标公用设施以尽可能降低追踪错误路线的风险。

发射机可通过以下三种方法发出信号：

直接连接

在直接连接中，您可以使用所配的红色直连导线，将发射机直接连接到您希望探测的管道或线缆。黑色导线一般通过配备的接地棒与地面连接。

然后，发射机将向线路发出离散信号，您可以利用定位仪追踪到该信号。该方法提供了单根线路上的最佳信号，可以使用较低的频率，并可在较长的距离上追踪到该频率。

 **警告！与带电导体直连可能具有致命危险。与带电导体的直接连接应仅由具有充分资质的人员操作，并仅使用允许和通电线路连接的相关产品。**

感应

将发射机置于地面上探测区域的上方或附近。您可以选择适当的频率。然后，发射机将把信号随机地引向附近的任何金属导体。在感应模式下，通常建议使用高频，因为这样较容易引向附近的导体。

发射机夹钳

可以使用选配的信号夹钳，将发射机的信号施加于绝缘带电导线或直径最大8.5英寸/215毫米的管道，并传输到公用设施。这种发射机信号传输方法对绝缘带电导线十分有效，且无需断开线缆的电源。

 **警告！不要将夹钳用于非绝缘的带电导体。**


 **警告！将夹钳用于电源线缆或从电源线缆上移除夹钳之前，应确保夹钳始终与发射机相连。**

无源频率定位

无源频率探测系利用埋设金属导体上已有的信号进行探测。RD7100支持探测三种类型的无源频率：电力、无线电以及CPS*信号。无需发射机的协助，您就可以探测到这些频率。

*依具体型号而定。


电力信号滤波器

RD7100PL和PLG定位仪允许操作人员利用电力网络上产生的谐波信号进行探测。进入电源模式后，按下  键切断英国雷迪灵敏的电源模式，并滚动选择五个独立的电力信号滤波器。这样可以帮助操作人员确定一个强电力信号是来自单一线缆还是来自多条线缆。然后，根据检测到线路的不同谐波特性便可以追踪和标记线路。

此外，在对于其它探测方式而言总信号过强的情况下，使用单独谐波能够帮助您准确定位线缆线路。

定位模式


根据所选型号，RD7100具有多达4种定位模式的选择，针对于不同的工作，每种定位模式都有其具体用途。

按下  键在不同的定位模式之间滚动。



峰值：主要用于精确定位，峰值条形图清楚呈现信号强度。在埋设公用设施的正上方会显示峰值信号。



峰值+：此模式可将精确的峰值条形图与谷值箭头结合以检测出失真现象，或与比例导向箭头结合使用以快速追踪线路，通过按住  键可在二者之间进行切换。



导向：将比例导向箭头和弹道‘指针’与左/右音频指示信息相结合，用于快速追踪埋设公用设施的大致路径。



谷值：快速显示公用设施路径的左/右指示信息。由于谷值易受到干扰，因此，最好在无其它公用设施的区域内使用。

深度、电流和罗盘读数

 **警告！**请勿将测量深度作为机械作业或其它挖掘工作指南使用。请始终遵守安全挖掘指南。

RD7100定位仪可测量并显示公用设施的深度、定位信号电流以及线缆或管道与定位仪的相对方位。这样可确保您追踪到正确的目标线缆或管道，尤其在有其它公用设施的环境下。

RD7100定位仪具有TruDepth™功能，该功能可以确保您的定位准确性。当定位仪与定位线缆或管道路径所成角度超过 7.5° ，或当定位仪确定信号条件太差无法进行可靠测量时，显示器会自动清除深度和电流数据。

使用配件

定位仪和发射机与大量的配件兼容。有关使用以下任何配件的详细信息，请参考RD7100定位仪操作手册。

发射机信号夹钳

当无法直接连接到管道或线缆时，或不宜使用感应模式时，可使用发射机信号夹钳。将夹钳插入发射机的输出口，就可以将定位信号施加于绝缘带电导线。这对带电绝缘线缆而言尤为有用，因为不需要再关闭电源和断开线路。

 **警告！不要将夹钳用于非绝缘带电导体。**

 **警告！将夹钳用于电力线缆或从电力线缆上移除夹钳之前，应确保夹钳始终与发射机相连。**

若要定位或识别单根线路，可以将信号夹钳和定位仪的配件插座相连，并夹在单个管道或线缆上。

听诊器和定位仪信号夹钳

定位仪夹钳通过检查最强的定位信号，可在若干不同线缆之中找到目标线缆或管道。当线缆成束或紧扎在一起时，可能无法使用夹钳，这时应使用听诊器天线来追踪线缆。

若要使用听诊器或定位仪信号夹钳，应将其与定位仪的配件插座相连。然后定位仪将自动检测装置，并过滤无关的定位模式。

探头、Flexrods以及FlexiTrace

探头是一种由电池供电的发射机，适合于追踪非金属管道。可将其固定在Flexrods上以推送至管道或导管，且其中有一些还可以吹送至整个管道系统。RD7100可以探测到多种探头频率，包括由flexiprobe™ P540c 推杆系统以及 flexitrax™ P550c 牵引探头发射的频率。

有关定位探头的详细指南，请参考操作手册。

FlexiTrace是一种可追踪的玻璃纤维杆，内置线缆导体，末端配有探头。FlexiTrace与发射机的输出端口相连，通常用于定位小口径非金属管道。用户可以选择定位线缆的全长，或仅定位线缆的末端。

FlexiTrace的最大额定功率为1W。当FlexiTrace与英国雷迪Tx-5或Tx-10发射机一起使用时，MAX P菜单中的输出限制必须设为1W，MAX V菜单中的输出电压限制必须设为LOW（低）。

Tx-1发射机无设置要求。

利用A字架进行故障查找

RD7100PL、PLG、TL和TLG型号能够利用A字架配件准确探测线缆或管道护套的缺陷。因线缆护套受损致使信号传向地面，这样的故障信号可被Tx-5或Tx-10的A字架型探测到。

可用发射机的万用表功能测量所连接管道或线缆的阻抗，从而查明故障性质。

有关故障查找的详细指导，请参考操作手册。

插座/带电线缆连接器

插座连接器与发射机的输出端口相连，将信号导入线路，并从本地电源插座到街道的供电线缆中追踪该信号。

带电线缆连接器可用于将信号导入带电线缆。仅具备恰当资质的人员才能使用本设备。

水下倍深天线

该天线与定位仪相连，用于定位水下深至100米/300英尺的管道和线缆。

 **警告：**水下天线仅可由具备充分许可和经验的人员在完整阅读操作手册后使用！

RD Manager电脑软件

RD Manager是RD7100定位仪系统的电脑配套软件，可以让您管理和自定义您的定位仪。RD Manager同样可用于检索和分析探测与使用数据、运行eCert校准、进行软件升级等。

您可以使用RD Manager来注册您的产品，以获得两年延长质保，并通过执行一系列维修任务，例如调整日期和时间、激活和撤销当前有源频率，或通过设置功能，诸如CALSafe或StrikeAlert来设置您的定位仪。

RD Manager 与运行 Microsoft Windows 64 位操作系统的电脑兼容。如需下载 RD Manager，请访问网站 www.radiodetection.com/RDManager。

如果您尚未连网或希望获得CD-ROM格式的RD Manager，请您联系当地的英国雷迪办公室或代表人员。

如需了解更多有关RD Manager的信息，请参考RD Manager操作手册。

自动记录使用数据

配备GPS的RD7100定位仪具有一个强大的数据记录系统，该系统记录所有关键参数（包括GPS位置，若可用）以及内存中的所有警告，记录频率为每秒一份。

自动记录系统始终打开，无法禁用。若定位仪每天正常工作8小时，其内存可存储500多天这样的使用数据。

可使用RD Manager的个人电脑程序来提取日志，以进行使用分析和探测验证。欲了解更多信息，请参考RD Manager操作手册。

GPS

RD7100定位仪可使用内部GPS模块（仅限GPS型号）来探测并存储其纬度、经度以及精确的UTC时间和位置数据。然后，可将该位置信息添加至自动使用记录系统。

利用GPS数据，能够轻松地对数据进行测绘、导出，并将信息直接存入地理信息系统。

GPS菜单设置

GPS菜单中有4个选项：

- INT：选择该选项来使用内部GPS（若有）。
- OFF：选择该选项，以关闭内部GPS模块，保存电力。
- SBAS：设定SBAS（卫星增强系统）模式，来提升GPS精度。在打开状态时，GPS系统需要较长的时间来锁定。
- RESET：选择“YES”，以重设内部GPS（仅限GPS型号）。

CALSafe

当配备GPS的RD7100型号定位仪超过既定维护/标定日期时，经启用的CALSafe系统将不允许该定位仪继续工作。

在维护截止日期30日内，该功能将在设备启动时显示剩余天数。定位仪将在既定维护截止日期停止工作。

默认关闭CALSafe系统。您可以激活CALSafe功能，并使用RD Manager个人电脑软件编辑CALSafe的维修/标定截止日期。有关更多详细信息，请参考RD Manager操作手册。

培训

英国雷迪公司为大多数雷迪产品提供培训服务。我们有资质的指导人员将在您期望的地点或英国雷迪公司总部对设备操作人员或其他人员进行培训。有关更多相关信息，敬请访问www.radiodetection.com，或联系您当地的英国雷迪公司代表。

维护和保养

RD7100定位仪和发射机功能强大、持久耐用，并不受气候影响。但您还可以通过遵循以下维护与保养指南，来延长您设备的使用寿命。

一般要求

将该设备存放在清洁干燥的环境中。

确保所有终端和连接插座清洁、无污物、无腐蚀且未损坏。

当本设备受损或有故障时请勿使用。

电池和供电

仅允许使用英国雷迪公司批准的可充电电池组、充电器以及电源。

若未使用可充电电池组，则仅允许使用优质的碱性电池或镍氢电池。

应根据贵公司的工作规范，以及/或贵国家的相关法律或指导政策来处理电池。

清洁

 **警告！** 当本设备通电或连接到任何电源时，包括电池、适配器以及带电线缆，不要尝试清洁本设备。

尽可能确保本设备清洁、干燥。

请使用柔软湿润的布料清洁本设备。不要使用研磨材料或化学物质，因为这些物质可能损坏外壳，包括反光标签。不要使用高压水流清洗设备。

若在污水系统中或可能存在生物风险的其它区域内使用本设备，请使用恰当的消毒剂。

软件升级

英国雷迪公司可能会不时发布软件升级以增强功能，并提高RD7100定位仪或发射机的性能。软件升级是免费的，且软件的升级将通过RD Manager个人电脑软件提供。

新软件版本的电子邮件提醒和通知会发送给所有注册用户。您也可以通过RD Manager软件升级界面检查您的产品是否为最新版本或对其进行升级。

注意：若要升级您产品的软件，您需要使用RD Manager创建一个账户，并连接在线网络。此外还可能需要选配的雷迪电源来更新您的发射机软件。

拆卸

在任何情况下都不要试图拆卸本设备。定位仪和发射机不包含用户可维护零件。

未经批准的拆卸将导致制造商的质保失效，并且可能会损坏设备或降低设备性能。

维修和维护

使用自检功能和eCert定期检查您的设备是否运转正常。

定位仪和发射机在设计上是不需要定期标定的。然而，和所有安全设备一样，建议每年至少在英国雷迪公司或其批准的维修中心对设备进行一次维修和校准。

注意：若由未经批准的维修中心维护，可能导致制造商的质保失效。

英国雷迪公司办公室和经销合作伙伴的详细信息可登录www.radiodetection.com进行查询。

英国雷迪公司的产品（包括本指南）均在不断的开发完善之中，因此会在不预先通知的情况下作出变更。有关RD7100定位仪或任何雷迪产品的最新信息，请访问www.radiodetection.com或联系您当地的英国雷迪公司代表。

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