### **RADIODETECTION**<sup>®</sup>

## Take the next step in locating buried infrastructure



Locate cables and pipes quickly and accurately

Increase operator productivity

Prevent damages to buried infrastructure





**Call** before you dig.

Locator technicians need reliable, accurate equipment that can be used all day, every day in tough environments

Introducing the new range of Radiodetection precision locators and transmitters

Light, quick to set up and easy to carry
Fast and precise locating
Alerts and warnings for safer on-site operations
Rugged, shock resistant, all weather tool
Premium quality, designed and made in the UK

# RD8200G

# When damage prevention is at the heart of what you do

Preventing damages to buried infrastructure is one of the biggest challenges for industry professionals.

#### Follow these three steps:

#### Use the best available technology

The RD8200G is o<mark>ur most advanced locator. It enables technicians to carry out their job correctly and efficiently, regardless of complexity.</mark>

## Give your technicians expert training

Our comprehensive training programs can be tailored to your specific needs to ensure operators are fully proficient.

#### Influence on-site behavior

The RD8200G records details on how, when and where it is used. Utilize this information to drive best-practice, identify training needs and maximize operator productivity.





#### Reduction of damage to buried infrastructure contributes to:

- Increased safety
- Improved service integrity
- Better cost control
- Lower insurance liabilities
- Enhanced reputation



## **RD8200**

### When precision and accuracy matter most

## Locate in congested areas and in the presence of strong interfering signals

Locating and tracing a specific utility in congested areas can be challenging. The RD8200 enables the field technician to confirm they are following the correct line, check for interference and avoid false positives, giving them confidence in the quality of their work.



## Produce cm-accurate utility maps

The demand for accurate utility maps is growing rapidly. The RD8200 precision locator can be connected with external GNSS systems, such as the Trimble Catalyst, and RD MAP+ to deliver cm-accurate maps.

#### A congested area

is a site with multiple cables and pipes buried closely together and often crossing each other, such as industrial or urban environments



**Interference** is an electrical disturbance that can affect the accuracy of the locator, typically caused by substations and buried or overhead high voltage cables

## **RD7200**

No compromise solution for every day locating and tracing

#### The all-industry locator

### A versatile, high quality solution, suitable for a wide variety of difficult locating tasks:

- Use in all weather conditions and tough environments, such as
   construction sites
- Accurate power cable identification
- Sonde locating for water, waste water and gas pipes
- Use of higher frequencies for high impedance, sheathed telecom lines
- Long distance tracing of buried utilities and pipelines

#### No compromise

In common with all our precision locators, the RD7200 delivers the premium build quality, reliability and ergonomics our customers demand and rely on.

## Why Radiodetection?

Radiodetection provides world class solutions to help the industry protect critical infrastructure and buried utilities



- Recognized as industry pioneers, Radiodetection has been offering its customers competitive advantages and operational efficiency through technology-leading solutions since 1977.
- Ease of operation and ergonomics the equipment of choice for many industry professionals.
- Quality, accuracy and reliability are the foundations of Radiodetection's unrivalled reputation in enabling operators to locate congested buried utilities quickly.
- Comprehensive distribution network, training and support offering local knowledge and support to maximise business continuity and efficiency.

### RADIODETECTION<sup>®</sup> *7*/2



### **RADIODETECTION**<sup>®</sup>

# Locating and marking buried utilities quickly, accurately and safely



The new **RD7200** is a no compromise all-industry locator, designed for accurate and effective every day use.

# **RD7200**<sup>®</sup>







## Precise, effective locating and tracing

#### Speed, accuracy and reliable performance

ANT ANT

#### Easy to setup and use

- Sun light readable display, high performance audio system and vibration alerts for noisy environments
- Sensitive and accurate signal processing for reliable results

## Multi-function multi-industry accurate locating

- Compass Orientation
- Power filters
- Utility specific frequencies

#### Protecting technicians and infrastructures

- Encourage correct locator handling for improved detection
- StrikeAlert, warns of the presence of shallow cables
- Vibration handle, never miss a warning

### Ergonomic design, premium quality

- Rugged yet light weight and ergonomic
- Designed and built to the highest standards in Great Britain
- Self Test for confidence and trust in your locator measurements

## Speed, accuracy and reliable performance

Easy to deploy and use – provides fast, precise and repeatable measurements

#### Industrial grade display, for outdoor usage

RD7200 locators and transmitters use transflective low power LCD technology that uses ambient light to improve screen readability in direct sun light and extend battery life.



#### TruDepth<sup>™</sup> and current readout, for extra assurance

Radiodetection's TruDepth displays precise depth and current measurements, only when the RD7200 is correctly oriented above the target. Measurement consistency gives high confidence that the correct line is being followed.

## High performance audio and vibration alerts, for noisy environments

The RD7200 waterproof speaker housing has been tuned to provide optimum resonance for your choice of high or low frequency tones.

5 power output audio levels and vibration alerts, assist technicians working in challenging situations.





#### Peak+ Mode, for speed and accuracy

Peak+ adds the benefits of Guidance or Null locating to the accuracy of Peak mode.

- Guidance gets you to the Peak position faster.
- Null lets you check for the distortion caused by other utilities, spurs or interference.



#### Class leading sensitivity, for difficult locates

State of the art Digital Signal Processing technology lets technicians detect and react to the weak signals associated with difficult to locate or deep utilities.

## Multi-function multi-industry locating

The RD7200 – accurate locating across multiple industries

#### Making locating easy

Advanced features such as Compass, TruDepth<sup>™</sup> and a broad range of locating frequencies make the RD7200 the perfect choice for all industries.

#### Construction

Accurate and simple to use, the RD7200 comes with eight active and three passive frequencies that cover the majority of site locating tasks. A rugged, IP65 rated casing along with a high contrast screen make it suitable for use in all weather conditions.



#### Power

In complex power environments, with multiple signals from high voltage equipment and cables, Radiodetection's Dynamic Overload Protection reduces the effect of interference and Power Filters can be used to trace a single target line amongst multiple cables.

#### Water and Pipeline

A wide choice of active frequencies allow conductive pipes to be traced for long distances.

Where sondes or cameras are used to survey pipes made from a variety of materials (including cast iron, clay, fiber, concrete and brick) the four RD7200 sonde



frequencies are ideal for quickly locating and tracing their position.

Pipes with Cathodic Protection System can be followed using the CPS passive mode. CPS compass mode ensures alignment with the target pipeline.

#### Telecom

The RD7200 features higher frequencies to locate high impedance lines and sonde frequencies for duct and conduit tracing. Higher frequencies can also be used to trace sheathed domestic cables without grounding connections.



Cable sheath faults can be located to within 4" (10cm) using 8kHz Fault Find mode with a Radiodetection A-Frame.

## Protecting technicians and infrastructures



Locators must be kept perpendicular to the ground for best accuracy. RD7200 locators have a built-in gyroscopic measurement system which alerts the user of excessive swing, driving correct usage.

#### StrikeAlert<sup>™</sup> in active and passive locating modes

Visual and audio warnings of shallow cables reduce the risk of accidents.

#### Vibration feedback, reduce the chance of missed warnings

The RD7200 handle vibrates when alerts activate, leaving the operator to concentrate on the job at hand.

## Ergonomic design, premium quality

#### Use it all day, day after day – light weight and ergonomic

The RD7200 has been designed around the operator's needs. The iconic industrial design provides an exceptionally well balanced, and light weight tool which is comfortable for extended periods of use.



#### Self-test – operator confidence on-site

The integrity of the measurement system can be confirmed on- site. Self-test applies signals to the locating circuitry as well as checking display and power functions.

#### Made in the UK – No compromise on quality

The RD7200 locator and transmitters are designed and manufactured in Great Britain and are subjected to a rigorous test regime before leaving our factory.

#### **Extended warranty and local support**

Backed by an industry leading 3 year warranty on registration. Our global sales and service network delivers comprehensive, localized technical support and training tailored to your needs

## Knowledge base and technical support, when you need it

RD7200 offers a comprehensive knowledge base library which is available to consult online from a mobile device or pc

Find an answer to or ask technical questions 24/7 by using Radiodetection's support portal.

#### Speaker and audio feedback

User facing speaker orientation, 5 levels of sound, choice of tone frequency. Designed to be heard in noisy environments

#### **Utility Optimized Frequencies**

Wide choice of utility specific locating frequencies

#### **Guidance Mode**

Rapidly trace the path of a target utility using proportional arrows and a directional indicator

#### Swing warning system

Alerts the operator of excessive swing

Match your transmitter to your locator model to simplify setup and use





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Locate over longer distances 90V signal output and automatic impedance matching



Li-lon battery pack Lithium-lon rechargeable battery pack options for both locator and transmitter provide extended runtime with reduced running costs.



**Sonde mode** Locate non-conductive pipes or cable ducts and conduits at depths of up to 50' (15m).

#### Vibrating handle

Provides vibration alerts, leaving the operators to concentrate on their tasks

Light weight and ergonomic design for comfortable use

High visibility reflective design helps protect operators and equipment



Built for on-site use – IP65 Shock resistant, ingress protected casing protects against knocks, drops, water and dust



**Precision by design** A unique arrangement of five custom manufactured, precision ground antennas deliver locate accuracy and repeatability

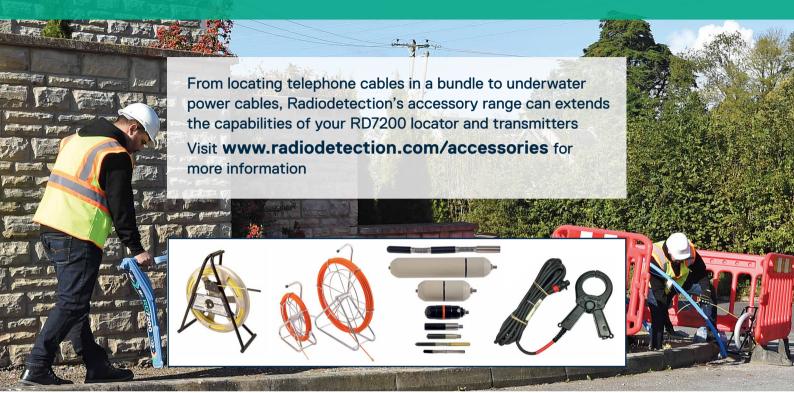
3 YEAR WARRANTY ON REGISTRATION AND A GLOBAL SERVICE NETWORK PROVIDE PEACE OF MIND



A locator for all industries 7 active and 4 sonde frequencies, 3 passive modes, power filters and other advanced features to provide efficient accuracy for locating and tracing burried utilities.

## **Extend your capabilities**

Add accessories to optimize the RD7200 system to your specific needs



### Ordering information

RD7200 locator	
Locate Frequencies 7	
Sonde Frequencies	4
Passive Modes 3	
Power Filters	<b>v</b>
Compass in active modes	<b>v</b>
Compass in passive modes	CPS, Power Filters
Depth in Power	<b>v</b>
CALSafe™	
Fault Find	<b>v</b>
Lithium-Ion Battery	•
3 year warranty on registration*	<b>v</b>

Transmitters	Tx-10	Tx-5
Max. Output Power	10W	5W
Active Frequencies	16	16
Induction frequencies	8	8
Induction field strength	1	0.85
Eco Mode	-	•
Lithium-Ion Battery	•	•
3 year warranty on registration*	~	<b>v</b>



\*Locators and transmitters only. Does not include battery packs and accessories.

Other features described are standard on the RD7200 Locators and Tx transmitters unless otherwise noted.

✓ Available, enabled by default ● Option ■ Available, disabled by default.

Download the full Product Specifications at www.radiodetection.com/RD7200

### **RADIODETECTION**<sup>®</sup>

# RD7200<sup>™</sup> locator specification

**Precision locators** 









### RD7200 Locator Specification

### 1. Product Summary

1.1 Product Descriptions	Precision Buried Utility Locator
	Precision Cable and Pipe Locator
	Locate System Receiver
	Utility Specific Precision Locator
1.2 Intended Use	Locating the position / path of buried pipes and cables
	Detecting and pinpointing insulation faults on buried pipes and cables
1.3 Standard Equipment	Locator
	Quickstart guide
	Type C to USB A data cable

### 2. Performance

2.1 Sensitivity	6E-15 Tesla 5μA at 1 meter (33kHz)		
2.2 Dynamic range	140dB rms/√Hz		
2.3 Selectivity	120dB/Hz		
2.4 Depth measurement precision <sup>1</sup>	± 3%		
2.5 Locate accuracy	± 5% of depth		
2.6 Active Locate filter bandwidth	± 3Hz, 0 < 1kHz ± 10Hz, ≥ 1kHz		
2.7 Start-up time	Less than 1 second		
2.8 Maximum depth readout <sup>2</sup>	Metric: Cable / Pipe: 30m Sonde: 19.5m Imperial: Cable / Pipe: 98' Sonde: 64'		

### 3. Locate Functions

3.1 Active Locate Modes	<ul> <li>Peak</li> <li>Peak+" (choice of combined Peak &amp; Guidance or Peak &amp; Null)</li> <li>Guidance</li> <li>Null</li> </ul>		
3.2 Gain control	Guidance Mode: Automatic Other modes: Manual gain using "+" or "-" with one touch to return to center (50% of Full Scale)		
3.3 Active locate frequencies	8 Frequencies: 512Hz, 640Hz, 8kHz, 33kHz, 65kHz, 83kHz, 131kHz and 200kHz		
3.4 Sonde Frequencies	4 Frequencies: 512Hz, 640Hz, 8kHz and 33kHz		
3.5 Fault Find	8KFF Locate insulation sheath faults on pipes and cables to 10cm / 4" accuracy using the accessory A-Frame and a compatible transmitter		
3.6 Passive Locate Modes	Power, Radio and CPS (Cathodic Protection System)		

	Switch out of Radiodetection's sensitive Power Mode to locate on any of 5 individual mains harmoni frequencies.			
	HARMONIC	50 Hz regions	60 Hz regions	
	Primary	50 Hz	60 Hz	
	3rd	150 Hz	180 Hz	
	5th	250 Hz	300 Hz	
	7th	350 Hz	420 Hz	
	9th	450 Hz	540 Hz	
.8 Information displayed	<ul> <li>Signal strength - moving bar graph and numeric value</li> <li>Mode indication (Peak, Null, Guidance, Peak+ with option of Guidance arrows or Null arrows)</li> <li>Line or Sonde locate type</li> <li>Proportional left/right indication</li> <li>Compass: full 360° line direction indicator</li> <li>Accessories in use indication</li> <li>Accessory specific custom screen</li> <li>Simultaneous depth and current readout (Line location)</li> <li>Depth readout (Sonde location)</li> <li>Gain level (in dB)</li> <li>Frequency selected</li> <li>Battery condition</li> <li>Speaker volume</li> <li>Operating frequency</li> <li>Configuration menu and submenus</li> <li>Software version</li> <li>Last calibration date</li> <li>Fault Find mode indicator</li> <li>Strike<i>Alert</i><sup>*</sup> warning</li> <li>Overload warning</li> <li>Swing warning</li> </ul>			
3.9 Audio output tones	Volume level:         Vol0, Vol1, Vol2, Vol3, Vol4 and Vol5         Audio Pitch:         Low and High         Audio feedback for menu navigation         StrikeAlert audio warning         Swing audio warning         Power / Radio modes:         Real Sound™ derived from detected electromagnetic signal         Peak / Peak+ modes:         Synthesized audio tone proportional to signal strength         Guidance mode:         Continuous tone when locator is to the left of target, intermittent tone when to the right of target         Null mode:         Synthesized audio tone proportional to signal strength. Low pitch to left of target, high pitch to right			
3.10 Accessory locate functions	strength read-out	identify individual target cable(s) in	in a bundle or cabinet using signal n a bundle or confined space such as a	

### 4. Locate Function Enhancements

4.1 Strike <i>Alert</i> <sup>™</sup>	Audio and visual warning when a cable or pipe less than 12" / 30cm deep is detected. Operates in Active and Passive locating modes
4.2 Haptic Vibration	Handle vibrates when StrikeAlert, Swing and Overload warnings activated
4.3 Swing Warning	Audio and visual warning when the user is swinging the locator excessively
4.4 Dynamic Overload Protection <sup>™</sup>	<ul> <li>40dB, automatic</li> <li>Automatically manages the system gain to compensate for strong signals e.g. from mains power or substations, to enable accurate locating</li> </ul>
4.5 Simultaneous depth and current readout	Both utility depth and locate signal current are displayed simultaneously, giving the operator more information to help them to follow the target utility
4.6 Fault Find	Apply a Fault Find signal with a Tx-5 and Tx-10 transmitter, then use an accessory A-Frame to detect and pinpoint insulation faults) Fault find accuracy: Metric: 100mm Imperial: 4"
4.5 Peak+ mode	Use the accurate Peak bargraph, and add either proportional Guidance arrows for faster locating, or Null arrows to check for the presence of distortion

### 5. Configurability

5.1 Option selection	All options can be enabled or disabled on the locator or using the RD Manager PC software
5.2 Languages supported	Fourteen: English, French, German, Dutch, Polish, Czech, Slovakian, Spanish, Portuguese, Swedish Italian, Turkish, Russian, Hungarian
5.3 Mains power network options	50 Hz or 60 Hz
5.4 Mode selection	All locate modes can be individually enabled or disabled
5.5 Active frequency selection	All active frequencies available can be individually enabled or disabled
5.6 Passive mode selection	All passive modes can be individually enabled or disabled
5.7 StrikeAlert	Enable / disable
5.8 Swing warning	Enable / disable
5.9 Haptic vibration	Enable / disable
5.10 Peak+ arrow selection	Guidance arrows or Null arrows Selected using the locator menu or with a long press of the antenna key

### 6. Connectivity

6.1 Wired connections	Mini USB: Connect to a PC to configure and update locator, and to retrieve usage log 3.5mm Stereo jack: Connect wired headphones
	Accessory port: Connect Radiodetection accessories
6.2 Wireless connections	BLE 5.0

### 7. Power options

7.1 Alkaline	2 × D-Cell (MN1300 / LR20) alkaline batteries (standard)	
7.2 Rechargeable	Custom Lithium-Ion (Li-Ion) battery pack 2 × D-Cell (MN1300 / LR20) Nickel Metal Hydride (NiMH) batteries	
7.3 Battery run-time (continuous) <sup>3</sup>	Li-Ion pack: 2 × Alkaline D-Cells	35 hours 13 hours
7.4 Battery chemistry identification	Lithium-Ion pack: NiMH / Alkaline:	Automatic sensing Software switchable
7.5 Charging options (Li-lon pack)	Mains charger: Automotive charger:	100-250 Volts AC, 50/60 Hz 12-24V DC
7.6 Charging time (Li-Ion pack)	3 hours to 80% from	empty with maintenance trickle charging thereafter

### 8. Physical Characteristics

8.1 Design	Ergonomic, balanced and lightweight design for comfortable use during extended surveys	
8.2 Construction	Injection Molded ABS Plastic	
8.3 Weight	With Lithium-Ion battery pack fitted:Metric:1.8kgImperial:4.0lbWith D-cell alkaline batteries fitted:Metric:1.9kgImperial:4.2lb	
8.4 Ingress Protection rating	IP65 Protected against dust ingress and jets of water⁴ applied from any direction	
8.5 Display type	High contrast custom made monochrome LCD	
8.6 Audio options	Built-in waterproofed speaker 3.5mm headphone socket	
8.7 Operating temperature⁵	Metric: -20 to 50°C Imperial: 14 to 122°F	
8.8 Storage temperature	Metric: -20 to 70°C Imperial: 14 to 158°F	
8.9 Unit dimensions	Metric: 648mm × 286mm × 125mm Imperial: 25.5" × 11.3" × 4.9"	
8.10 Shipping dimensions	Metric: 700mm x 260mm × 330mm Imperial: 27.6" x 10.2" x 13"	
8.11 Shipping weight (with batteries fitted)	Metric: 2.6kg Imperial: 5.7lb	

### 9. RD Manager<sup>™</sup> Online Supporting PC Software

9.1 Operating System Compatibility	Microsoft® Windows® 10 64-bit versions
9.2 Locator system compatibility	Radiodetection RD7200 and RD8200 Precision Locators
9.3 Functions	<ul> <li>Locator configuration</li> <li>eCert<sup>™</sup> remote calibration certification</li> <li>Factory calibration certificate retrieval</li> <li>User account management</li> <li>CALSafe<sup>™</sup> maintenance schedule enforcement</li> <li>Locator software update</li> </ul>

### 10. Warranty and Maintenance

10.1 Manufacturer's warranty duration	3 years standard, on registration
10.2 Recommended calibration and maintenance schedule	Annual, or at the beginning / end of a lease period if earlier
10.3 eCert remote calibration	<ul> <li>Remote calibration certification using an internet connection to Radiodetection</li> <li>Recommended schedule: annual, or at the beginning / end of a lease period</li> </ul>
10.4 CALSafe <sup>™</sup>	<ul> <li>Can be enabled to prevent the locator operating when beyond a defined calibration / maintenance schedule</li> <li>Disabled by default</li> <li>30-day countdown to calibration due date</li> </ul>
10.5 Enhanced Self-Test	On-unit Applies test signals to locate circuitry to confirm correct operation, as well as the typical tests for screen and DSP functions. Recommended schedule: weekly, or before each use.
10.6 Storage recommendation	Store in a clean and dry environment. Ensure all terminals and connection sockets are clean, free of debris and corrosion and are undamaged
10.7 Cleaning	<ul> <li>Clean with a soft, moistened cloth.</li> <li>Do not use</li> <li>Abrasive materials or chemicals</li> <li>High pressure jets of water</li> <li>If using this equipment in foul water systems or other areas where biological hazards may be present, use an appropriate disinfectant.</li> </ul>

### 11. Certification and Compliance

11.1	Standards	
	Safety:	EN 61010-1:2010
	EMC:	EN 61326-1:2013
		EN 300 330-2 (V1.5.1)
		EN 300 440-2 (V1.4.1)
		EN 301 489-3 (V1.6.1)
		EN 301 489-17 (V2.2.1)
	Environmental:	EN 60529 1992 A2 2013
		EN 60068-2-64:2008 Test Fh
		ESTI EN 300 019-2-2:1999 (per table 6)
		EN 60068-2-27:2009 (Test Ea)
		ESTI EN 300 019-2-2:1999 (per table 6)
11.2	European directives	Radio Equipment Directive – 2014/53/EU
		Low Voltage Directive – 2014/35/EU
		EMC Directive – 2014/30/EU
		RoHS – Restriction of Hazardous Substances – Directive – 2011/65/EU
		Declaration of conformity is available from www.radiodetection.com
11.3	Environmental	WEEE compliant
		ROHS compliant
1.4	Manufacturing	ISO 9001:2015

### 12. Compatible Accessories

	Accessory	Part description						Part number
12.1	Lithium-Ion battery packs	Li-Ion rechargeable Li-Ion rechargeable					charger)	10/RX-MBATPACK-LION-K 10/RX-BATPACK-LION
12.2	Lithium-Ion battery chargers	Li-Ion automotive Li-Ion mains charg	•					10/RX-ACHARGER-LION 10/RX-MCHARGER-LION
12.3	Alkaline battery trays	2 × D Cell battery	tray (MN	1300 / LF	R20)			10/RX-2DCELL-TRAY
12.4	Transportation and storage accessories – For combined locator and transmitter	Wheeled Flight Case				10/LOCATORBAG 10/RD7K8KCASE 10/RD7K8KCASE-USA		
12.5	Locator signal clamps – For identification and location of utilities	Metric:50mm Locator ClampImperial:2" Locator ClampMetric:100mm Locator ClampImperial:2" Locator ClampMetric:130mm Locator ClampImperial:5" Locator Clamp				10/RX-CLAMP-50 10/RX-CLAMP-2 10/RX-CLAMP-100 10/RX-CLAMP-4 10/RX-CLAMP-130 10/RX-CLAMP-5		
12.6	Signal stethoscopes – To locate and identify individual utilities e.g. within walls, congested areas or when cables/utilities are in close proximity to each other	Large Stethoscope	High Gain Stethoscope Large Stethoscope Small Stethoscope			10/RX-STETHOSCOPE-HG 10/RX-STETHOSCOPE-L 10/RX-STETHOSCOPE-S		
12.7	Sondes Battery powered signal		Diar	neter	Ra	nge	_	
	transmitters for tracing or locating non-conductive utilities		mm	In	m	Ft	Freq (Hz)	
		S6 Microsonde	6	1⁄4	2	<b>6</b> ½	33k	10/SONDE-MICRO-33
		S9 Minisonde	9	3/8	4	13	33k	10/SONDE-MINI-33
		S13 Super Small Sonde	13	1⁄2	2	61⁄2	33k	10/SONDE-S13-33
		S18 Small Sonde	18	3/4	4	14	33k	10/SONDE-S18A-33
		Standard					33k	10/SONDE-STD-33
		Standard C-Sonde	39	11⁄2	5	16½	8	10/SONDE-STD-8
							512	10/SONDE-STD-512
		Sewer Sonde	64	<b>2</b> ½	8	26	33k	10/SONDE-SEWER-33
		Super Sonde	64	<b>2</b> ½	15	50	33k	10/SONDE-SUPER-33
		Flexi Sonde	23	7/8	6	20	512	10/SONDE-BENDI-512
2.8	Submersible antennas	640Hz Submersibl	512Hz Submersible DD Antenna 640Hz Submersible DD Antenna 8kHz Submersible DD Antenna				10/RX-SUBANTENNA-512 10/RX-SUBANTENNA-640 10/RX-SUBANTENNA-8K	
12.9	FlexiTrace <sup>™</sup> – Use with a transmitter to	FlexiTrace 50m / 165' FlexiTrace 80m / 260'					10/TRACE50-GB 10/TRACE80-GB	

Accessory	Part descrip	otion	Part number		
12.10 Flexrods – Fibreglass rod used for	Length		Diameter	r	
propelling Radiodetection sondes through pipes to trace the path and locate blockages	m	Ft	mm	In	
	50	160	4.5	3/16	10/FLEXRODF50-4.5
	80	260	4.5	3/16	10/FLEXRODF80-4.5
	50	160	7	1/4	10/FLEXRODF50-7
	100	320	7	1/4	10/FLEXRODF100-7
	150	485	7	1/4	10/FLEXRODF150-7
	60	195	9	3/8	10/FLEXRODF60-9
	120	390	9	3/8	10/FLEXRODF120-9
12.11 A-Frame – Used for locating sheath faults on cables and coating defects on pipelines		A-Frame (includes A-Frame Lead) A-Frame Bag			10/RX-AFRAME 10/RX-AFRAME-BAG
12.12 Headphones	Recommende	Recommended for use in noisy environments			10/RX-HEADPHONES
12.13 Calibration Certificates	Locator Calibration Certificate, per unit (request with initial locator order) eCert <sup>®</sup> Calibration Credit			97/RX-CALCERT	

All specification are measured in test conditions, at 21°C / 70°F, and fitted with 2 × good quality alkaline batteries unless otherwise noted.

1 Based on volumetric testing at a known fixed depth. True depth accuracy depends on factors such as ground composition, utility characteristics and the locate frequency / signal strength employed. Always follow local safe digging guidelines.

2 The RD7200 will locate to greater depths in the right conditions, but depth accuracy will be compromised. Depth measurement will not be displayed beyond these depths.

3 To provide repeatable measurements volume level is set to VOL0.

4 Water projected by a nozzle at a pressure of 30kPa /0.3 bar / 4.4 psi in accordance with BS EN 60529 1992 A2 2013.

5 At very low temperatures, battery life will be degraded and measurement precision may be reduced.

#### Visit www.radiodetection.com

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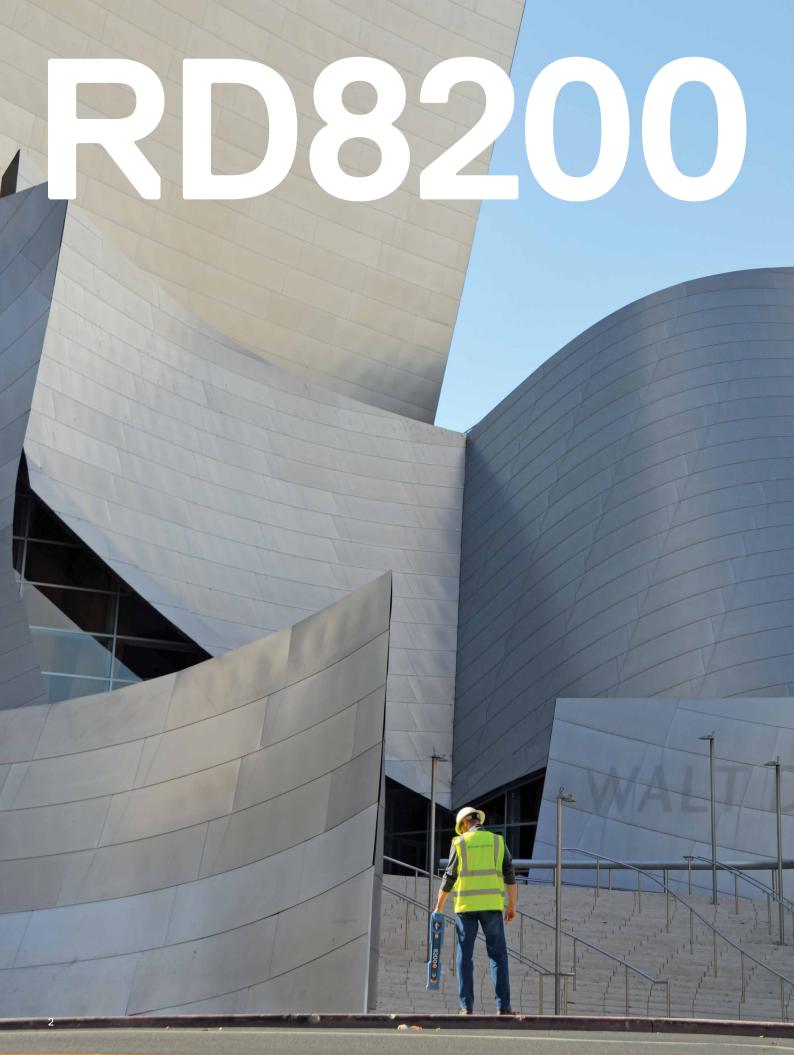
# Damage prevention and operational efficiency are the biggest challenges facing our customers











## The professional choice in damage prevention

Colorado

## Speed, accuracy and reliable performance

- Easy to setup and use
- Sun light readable display, high performance audio system and vibration alerts for noisy environments
- Sensitive and accurate signal processing for reliable results

#### Adaptable in challenging environments

- Ideal for congested underground infrastructures
- Rejects strong interfering signals
- Identify target power cable in the presence of many

#### Technology driven best on-site practise

- Encourage correct locator handling for improved detection
- Monitor field operations through the automatic usage logging feature
- Proof of work to differentiate your operations from your competition and add value to your clients

#### Ergonomic design, premium quality

- Rugged yet light weight and ergonomic
- Designed and built to the highest standards in Great Britain
- Self Test for confidence and trust in your locator measurements

## Speed, accuracy and reliable performance

Easy to deploy and use – provides fast, precise and repeatable measurements

#### Industrial grade display, for outdoor usage

RD8200 locators and transmitters use transflective low power LCD technology that uses ambient light to improve screen readability in direct sun light and extend battery life.



#### TruDepth<sup>™</sup> and current readout, for extra assurance

Radiodetection's TruDepth displays precise depth and current measurements, only when the RD8200 is correctly oriented above the target. Measurement consistency gives high confidence that the correct line is being followed.

## High performance audio and vibration alerts, for noisy environments

The RD8200 waterproof speaker housing has been tuned to provide optimum resonance for your choice of high or low frequency tones.

5 power output audio levels and vibration alerts, assist technicians working in challenging situations.





#### Peak+ Mode, for speed and accuracy

Peak+ adds the benefits of Guidance or Null locating to the accuracy of Peak mode.

- Guidance gets you to the Peak position faster.
- Null lets you check for the distortion caused by other utilities, spurs or interference.

#### Passiv<mark>e Avoidance, for</mark> a quick perimeter scan

Rapidly check an area before excavation using simultaneous detection of the Passive Power and Radio signals carried on underground cables or pipes.

#### Class leading sensitivity, for difficult locates

State of the art Digital Signal Processing technology lets technicians detect and react to the weak signals associated with difficult to locate or deep utilities.

## iLOC, for efficient operations

Long range wireless link between the RD8200 locator and a compatible transmitter allows you to control the locate signal's power and frequency from up to 1400'/450m away.

## Adaptable in challenging environments

The RD8200 range of locators and transmitters simplify the task of distinguishing and tracing utilities in congested networks, near substations or high voltage lines



#### Current Direction, track the right line

Identify your target amongst a number of parallel utilities by applying a specialized CD signal from a Tx-10 transmitter. CD arrows displayed on the locator confirm you are tracing your target line.

#### Power Filters™, works where other locators wont

When a transmitter can't be connected, tracing individual power lines through dense networks can be a real challenge. Conflicting or powerful signals confuse or combine to create a wash of signal.

A single key press enables the use of the harmonic properties of power signals to establish if a signal comes from one source, or from multiple cables which you can then trace and mark.

## Dynamic Overload Protection, rejects unwanted interference

Automatically filters out interference, enabling use in electrically noisy environments such as near substations or overhead power lines.



#### 4 kHz locate & CD, optimized for telecoms and street lighting

The 4 kHz locate frequency allows high impedance lines to be traced over longer distances. Combine 4 kHz with CD to improve trace accuracy in areas of dense infrastructure.

#### SideStep<sup>™</sup>, interference evasion

Shifts the locate frequency to survey in areas prone to interference or where more than one operator is working.

## Technology driven best on-site practise

RD8200 locators offer many features designed to drive correct usage, reduce utility damage, improve safety and enhance your reputation

#### Swing Warning System, drives correct usage

Locators must be kept perpendicular to the ground for best accuracy. RD8200 locators have a built-in gyroscopic measurement system which alerts the user of excessive swing, driving correct usage.

## Usage-logging with GPS positioning, understand how your technicians operate

The RD8200G locator automatically stores all locate parameters providing a comprehensive picture of field operations.

Supervisors or health and safety personnel can analyse the data to assess usage patterns in order to ensure adherence to best-practice and to identify training needs before poor work habits develop.

The information can also be shared with partners or clients to evidence task completion or compliance to service requirements.

Usage data can be exported in multiple file formats – for example KML for Google Maps to confirm where and when work was performed.



## StrikeAlert<sup>™</sup>, minimizes risk of accidents

Visual, vibration and audio warnings, both in active and passive locating modes, of shallowed utility lines.

#### Vibration feedback, reduces the chance of missed warnings

The RD8200 locator handle vibrates when alerts activate, leaving the operator to concentrate on the job at hand.

## Ergonomic design, premium quality

The RD8200 is a light yet rugged tool ready to operate in most difficult conditions, day after day. Radiodetection help is always at hand with our online support website.

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#### Made in the UK – No compromise on quality

The RD8200 locator and transmitters are designed and manufactured in the Great Britain and are subjected to a rigorous test regime before leaving our factory.

#### Locate with confidence – Self-test

Confirm the integrity of the measurement system on-site. Self-test applies signals to the locating circuitry as well as checking display and power functions.

## Use it all day, day after day – light weight and ergonomic

The RD8200 has been design around the operator needs. The iconic industrial design provides an exceptionally well balanced, and light weight tool which is comfortable for extended periods of use.

#### Sun or rain, hot or cold – works in harsh conditions

IP65 rating and wide temperature usage (-4°F to 122°F/-20°C to 50°C) allow the RD8200 locators and transmitters to work in difficult weather conditions.

## Knowledge base and Technical support, when you need it

RD8200 offers a comprehensive knowledge base library which is available to consult online from a mobile device or pc.

Find an answer to or ask technical questions 24/7 by using Radiodetection's support portal.





#### Extended warranty and Local Support

The RD8200 is backed with an industry leading 3 year warranty on registration. Our global sales and service network delivers comprehensive localized technical support and training tailored to your needs.

#### Remote calibration without downtime eCert<sup>™</sup>

Verify and certify the calibration of your locator over the internet using the RD Manager™ PC software package without returning the unit to a service center.

#### Schedule your calibration – CALSafe™

Choose to automatically enforce maintenance or lease schedules by providing a 30 day countdown before the calibration certificate expires.

# Advanced features and operations, ready for a connected world

The RD8200 system is a feature rich locating solution, designed to extend and future proof your field capabilities

#### RDMap<sup>™</sup>+, for easy and cm accurate utility mapping

Add positional data to your survey measurements with the integrated GNSS option, and use RD MAP+ to create in real time\*, detailed maps of buried utilities.

Combine with a high accuracy external positioning device, such as the Trimble Catalyst RTK solution, to create high accuracy utility maps\*\*.

\*Requires data connectivity and Google Maps. \*\*Trimble Catalyst and RTK correction subscription required for high accuracy.



#### Custom frequencies, for matching your RD8200 to a specific telecom network

Confirm the integrity of the measurement system on-site. Self-test applies signals to the locating circuitry as well as checking display and power functions.

#### Use it all day, day after day - light weight and ergonomic

Up to 5 additional frequencies can be programmed into your locator to match it to the signals found on your target networks.

#### Dual Bluetooth connectivity, ready for a connected world

The RD8200 locator provides a dual Bluetooth system, which combines long range iLOC functionality and low power connectivity to deliver a system ready to connect to cloud based data solutions.

#### Fault Find mode, for pinpointing cable sheath damage

Combine the RD8200 locator with an accessory A-frame to identify and locate insulation sheath faults to within 4" (10cm).

## 90V Transmitter output, for dry ground conditions and deep or long locates

More locate signal on high impedance target lines.

#### Multimeter function, for optimum connection to your target utility

Assess your connection to the utility using your transmitter: quickly measure line voltage, current and impedance. This ensure best performance of your RD8200 locating system.

#### RD Manager for PC, for easy management of your RD8200

Set-up, calibrate and update your locator from a PC. Download usage logging and survey measurement data for analysis. Create customizable KML files.





SOLUTIONS FOR A CONNECTED WORLD

8

#### Speaker and audio feedback

User facing speaker orientation, 5 levels of sound, choice of tone frequency. Designed to be heard in noisy environments

#### **Custom Frequencies**

Program up to 5 extra frequencies to customize the RD8200 to signals found on your network

#### Survey Measurements with Bluetooth® Connectivity

Store up to 1000 records and send wirelessly to a mobile device or PC using Bluetooth. Optional integrated GPS adds positional data without requiring an external device

#### Locate over longer distances

90V signal output and automatic impedance matching

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4 kHz frequency with Current Direction for locating and tracing higher impedance cables over longer distances



**On-site monitoring** Integrated GPS and multi-rate automatic usagelogging allow managers to review locate history to ensure compliance with best practice.



Provides vibration alerts, leaving the operators to concentrate on their tasks

Light weight and ergonomic design for comfortable use

High visibility reflective design helps protect operators and equipment



Built for on-site use – IP65 Shock resistant, ingress protected casing protects against knocks, drops, water and dust



Precision by design A unique arrangement of five custom manufactured, precision ground antennas deliver locate accuracy and repeatability







Li-lon battery pack Lithium-Ion rechargeable battery options for both locator and transmitter provide extended

runtime with reduced running costs.



Base tray for accessories

Swing Warning System Alerts the operator of excessive side to side movements, driving correct RD8200 usage.

## Maximise your capabilities

Add accessories to optimize the RD8200 system to your specific needs

From locating telephone cables in a bundle to underwater power cables, Radiodetection's accessory range can extends the capabilities of your RD8200 locator and transmitters Visit **www.radiodetection.com/accessories** for more information

### Ordering information

RD8200 locators:	RD8200	RD8200 G
Locate Frequencies	22	22
Sonde Frequencies	4	4
Passive Modes	5	5
On-board GPS		<ul> <li>✓</li> </ul>
Power Filters	~	~
Usage-Logging		~
Survey Measurements	~	~
CALSafe™		
4 kHz	4k+CD	4k+CD
Current Direction	~	~
Fault Find	~	~
Depth in Power	~	<ul> <li>✓</li> </ul>
Passive Avoidance	~	~
iLOC	~	~
Dual Bluetooth connectivity	~	~
Lithium-Ion Battery	•	•
3 year warranty on registration*	~	~

Transmitters	Tx-5	Tx-10	Tx-10B
Max. Output Power	5W	10W	10W
Active Frequencies	16	16	36
Induction frequencies	8	8	8
Current Direction Frequencies		6	14
iLOC remote control			~
Fault Find	<b>v</b>	<b>~</b>	<ul> <li>✓</li> </ul>
Induction field strength	0.85	1	1
Eco Mode			
Lithium-Ion Battery	•	•	•
3 year warranty on registration*	<b>v</b>	<b>v</b>	~

\*Locators and transmitters only. Does not include battery packs and accessories.

Other features described are standard on the RD8200 Locators and Tx transmitters unless otherwise noted.

 $\checkmark$  Available, enabled by default  $\bullet$  Option  $\blacksquare$  Available, disabled by default.

Download the full Product Specifications at www.radiodetection.com/RD8200

## Visit www.radiodetection.com

### **RADIODETECTION**<sup>®</sup>

# RD8200<sup>™</sup> locator specification

**Precision locators** 









### RD8200 Locator Specification

### 1. Product Summary

1.1 Product Descriptions	Multi-purpose Precision Locator				
	Cable and Pipe Locator				
	Locate System Receiver				
	Multi-function Precision Locator				
1.2 Intended Use	Locating the position / path of buried cables and pipes				
	Detecting and pinpointing insulation faults on buried cables and pipes				
	Creating survey records of buried cables and pipes locations				
1.3 Standard Equipment	Locator				
	Quickstart guide				
	Type C to USB A data cable				

### 2. Performance

2.1 Sensitivity	6E-15 Tesla 5μA at 1 meter (33kHz)		
2.2 Dynamic range	140dB rms/√Hz		
2.3 Selectivity	120dB/Hz		
2.4 Depth measurement precision <sup>1</sup>	± 3%		
2.5 Locate accuracy	± 5% of depth		
2.6 Active Locate filter bandwidth	± 3Hz, 0 < 1kHz ± 10Hz, ≥ 1kHz		
2.7 Start-up time	<1 second		
2.8 Maximum depth readout <sup>2</sup>	Metric:       Cable / Pipe: 30m       Sonde: 19.5m         Imperial:       Cable / Pipe: 98'       Sonde: 64'		

### 3. Locate Functions

3.1 Active Locate Modes	Five: • Peak • Peak+ <sup>™</sup> (choice of combined Peak & Guidance or Peak & Null) • Guidance • Broad Peak <sup>™</sup> • Null
3.2 Gain control	Guidance Mode: Automatic Other modes: Manual gain using "+" or "-" with one touch to return to center (50% of Full Scale)
3.3 Custom locate frequencies	Up to 5 additional frequencies in the range 50Hz to 1kHz at 1Hz resolution
3.4 Active locate frequencies	21 Frequencies: ELF (98/128Hz), 512Hz, 570Hz, 577Hz, 640Hz, 760Hz, 870Hz, 920Hz, 940Hz, 1090Hz, 1450Hz, 4096Hz, 8kHz, 8440Hz, 9820Hz, 33kHz, 65kHz, 82kHz, 83kHz, 131kHz and 200kHz
3.5 Sonde Frequencies	4 Frequencies: 512Hz, 640Hz, 8kHz and 33kHz
3.6 Fault Find	8KFF and CDFF Locate insulation sheath faults on pipes and cables to 10cm / 4" accuracy using the accessory A-Frame and a compatible transmitter

3.7 Current Direction <sup>™</sup> (CD) Signal Pairs	4096/8192Hz, 680/340Hz (I (INV), 1248/624Hz (INV),	219.9/439.8Hz, 256/512Hz, 280/560Hz, 285/570Hz, 320/640Hz, 380/760Hz, 460/920Hz, 4096/8192Hz, 680/340Hz (INV), 800/400Hz (INV), 920/460Hz (INV), 968/484Hz (INV), 1168/584Hz				
3.8 Passive Locate Modes	<ul> <li>Power</li> <li>Radio</li> <li>CPS – cathodic protection system</li> <li>CATV – Cable TV</li> <li>Passive Avoidance – simultaneous locate of power and radio</li> </ul>					
3.9 Power Filters <sup>™</sup> function	Switch out of sensitive Power Mode to locate on any of 5 individual mains harmonic frequencies:					
	HARMONIC	50 Hz regions	60 Hz regions			
	Primary	50 Hz	60 Hz			
	3rd	150 Hz	180 Hz			
	5th	250 Hz	300 Hz			
	7th	350 Hz	420 Hz			
	9th	450 Hz	540 Hz			
3.10 Information displayed	<ul> <li>Mode indication</li> </ul>	ication rection indicator tion n screen t (Line location) ation) nere fitted) submenus nter dicator	Guidance arrows or Null arrows)			
	VOL0, VOL1, VOL2, VOL3, VO Audio Level Pitch: Low and High Audio feedback for menue StrikeA/ert audio warning Swing audio warning Power / Passive Avoidance Real Sound™ derived from of Peak / Peak + modes and O Synthesized audio tone pro Guidance mode: Continuous tone when locat Null mode:	navigation / Radio modes: letected electromagnetic signa SPS / CATV modes: portional to signal strength for is to the left of target, intern	I nittent tone when to the right of target tch to left of target, high pitch to right of target			

3.12 Accessory locate functions	Locator clamps: Used to identify individual target cable(s) in a bundle or cabinet using signal strength read-out
	Stethoscopes:
	Used to identify individual target cable(s) in a bundle or confined space such as a cabinet using
	signal strength read-out
	CD / CM clamp:
	Used to measure locate current and to confirm target cable using Current Direction
	Please refer to Section 13 Compatible Accessories – for a complete list of locator accessories

### 4. Locate Function Enhancements

4.1 Strike <i>Alert</i>	Audio and visual warning when a cable or pipe less than 30cm deep is detected. Operates in Active and Passive locating modes
4.2 Haptic Vibration	Handle vibrates when StrikeAlert, Swing and Overload warnings activated
4.3 Swing Warning	Audio and visual warning when the user is swinging the locator excessively
4.4 Dynamic Overload Protection™	<ul> <li>40dB, automatic</li> <li>Automatically manages the system gain to compensate for strong signals e.g. from mains power o substations, to enable accurate locating</li> </ul>
4.5 Overload warning	If the RD8200 becomes overloaded, users will be alerted by a flashing mode icon. Both the depth an current measurements will be disabled in the event of an overload.
4.6 Current Direction <sup>™</sup> (CD)	<ul> <li>Measures the direction of current flowing in buried pipes or cables to ensure that an operator is able to identify and follow the target utility</li> <li>Provides operator with arrows indicating the direction of current flowing in the located pipe or cable to confirm that they are following the target utility</li> </ul>
4.7 iLOC <sup>™</sup>	Metric: Remote transmitter control from up to 450m away <sup>3</sup> Imperial: Remote transmitter control from up to 1400' away <sup>3</sup> Control transmitter frequency, power level and SideStep
4.8 SideStep <sup>™</sup>	Enables locating where other signals are interfering, and without compromising the optimum locate frequency Remotely shifts the locate and transmitter frequency by several Hz, out of the bandwidth of other locate signals that may be interfering with the locate
4.9 Simultaneous depth and current readout	Both utility depth and locate signal current are displayed simultaneously, giving the operator more information to help them to follow the target utility
4.10 Survey Measurements	Store up to 1,000 survey points within the locator, and append GPS data from internal GPS (if fitted) or external GNSS sources over Bluetooth <sup>®</sup> Export data immediately or as a batch over Bluetooth
4.11 Fault Find	Apply a Fault Find signal with a Tx-5 and Tx-10 transmitter, then use an accessory A-Frame to detect and pinpoint insulation faults Fault find accuracy: Metric: 100mm Imperial: 4"
4.12 4kHz locate frequency and 4kHz CD	Designed for tracing higher impedance lines such as twisted pair telecoms or street lighting over distance Combine with Current Direction to help trace the target utility through dense or complex infrastructure
4.13 Peak+ mode	Use the accurate Peak bargraph, and add either proportional Guidance arrows for faster locating, or Null arrows to check for the presence of distortion

### 5. Configurability

5.1 Option selection	All options can be enabled or disabled on the locator or using the RD Manager PC software
5.2 Languages supported	Fourteen: English, French, German, Dutch, Polish, Czech, Slovakian, Spanish, Portuguese, Swedish, Italian, Turkish, Russian, Hungarian
5.3 Mains power network options	50 Hz or 60 Hz
5.4 Mode selection	All locate modes can be individually enabled or disabled
5.5 Active frequency selection	All active frequencies available can be individually enabled or disabled
5.6 Passive mode selection	All passive modes can be individually enabled or disabled
5.7 StrikeAlert	Enable / disable
5.8 Swing warning	Enable / disable
5.9 Haptic vibration	Enable / disable
5.8 Peak+ arrow selection	Guidance arrows or Null arrows Selected using the locator menu or with a long press of the antenna key
5.9 GNSS ('GPS') settings	Internal / External (connect over Bluetooth) / Off / Reset
5.10 iLOC Connectivity	On/Off
5.11 Data export protocols supported	PPP/choice of 3 ASCII formats. Optionally append positional data
5.12 Time / date setting	Correct or update locator real-time clock using the RD Manager PC software or GNSS signals
5.13 CD Reset	Reset CD phase analysis with a single long press of the frequency key
5.14 Audio	Set audio tone frequency level high or low

### 6. Connectivity

6.1 Wireless connections	Bluetooth 2.0 – SPP profile, class 1 BLE 5.0
6.2 iLOC <sup>™</sup> remote transmitter control range <sup>3</sup>	Metric: Up to 450m Imperial: Up to 1400'
6.3 iLOC remote transmitter control functions	Set transmitter frequency Set transmitter power output level Transmitter standby SideStep
6.4 Wired connections	Type C USB: Connect to a PC to configure and update locator, and to retrieve usage log and surveymeasurement data3.5mm Stereo jack: Connect wired headphonesAccessory port: Connect Radiodetection accessories

# 7. Data capabilities and GNSS ('GPS')

7.1 On-board GNSS ('GPS') option	<ul> <li>GNSS data automatically added to Survey Measurements every time locate data is saved, and every second on usage-logging data</li> <li>Accurate to 2.5m CEP with SBAS enhancement available</li> <li>Supports GPS and GLONASS satellites constellations</li> <li>SBAS - Augmentation systems (where available)</li> <li>WAAS - North America</li> <li>EGNOS - Europe</li> <li>MSAS - Japan</li> <li>GAGAN - India</li> </ul>
7.2 Link to external GNSS ('GPS')	Over Bluetooth <ul> <li>Connect to an external GNSS enabled device to combine survey measurements with that device's GNSS data on the external device</li> </ul>
7.3 External GNSS position read-in to locator memory	<ul> <li>Connect to an external GNSS device to read positional positioning from that device and combine with the locator's survey measurement data on board the locator<sup>4</sup></li> </ul>
7.4 Usage-logging memory	4 Gb
7.5 Usage-logging capacity	Over 500 days, measured at 8 hours use per day
7.6 Usage-logging capture rate	1/second

7.7 Usage parameters logged	Serial number	Keys pressed	With a GNSS fix:
	Log reference and id	Audio status	Latitude
	Operating mode	Volume	Longitude
	Locate frequency	Menu in use	Altitude
	Sonde/line	Battery status	GNSS mode
	Signal strength	User warnings status	GNSS date and time
	Gain setting	StrikeAlert status	Horizontal Dilution
	Depth	Bluetooth status	Geoid
	Current	Fault find arrow	DGPS Time and ID
	Accessory in use	Sidestep status	Geoid Units
	Antenna mode	Language	GNSS fix
	Arrows readout	Depth units	Number of satellites
	Compass angle	Power setting	Altitude units
	CD phase	Compass setting	Time reference
	Overload status	CD reset status	
	Dynamic Overload Protection	Swing angles	
	Status	Utility	
		Logging Units:	
		Date and time	

7.8 Survey measurement capacity	Up to 1,000 data records				
7.9 Survey measurement data	Standard data:	With Internal or External GNSS Fix:			
captured	Log #	GPS Mode			
	Survey Reference	GPS Date and Time			
	Antenna Mode	GPS Distance (m)			
	Depth	Latitude Angle (deg)			
	Current (mA)	Latitude Direction			
	Frequency in use (Hz)	Longitude Angle (deg)			
	Sonde/Line	Longitude Direction			
	Signal Strength (dBųV and %)	GPS Fix			
	Signal Strength (%)	Satellites in use			
	Gain Setting (dB)	Horizontal Dilution			
	Compass (deg)	Altitude Value (m)			
	Arrow readout	Altitude Units			
	CD Phase (deg)	Geoid Value (m) and Units			
	Accessory Type	DGPS Time			
	Battery level	DGPS ID			
	Volume	Time Reference			
	Overload Flag	GPS Mode			
	Usage-Logging Units:	GPS Date and Time			
	Date and Time	GPS Distance (m)			
		Latitude Angle (deg)			
7.10 Survey measurement export options	Bluetooth – 'live,' per measurement Bluetooth – batch export USB – selectable / batch export				
7.11 Bluetooth survey measurement data protocol options	ions ASCII (choice of 3 formats) Optional GPS data appended				

# 8. Power options

8.1 Alkaline	2 × D-Cell (MN1300 / LR20) alkaline batteries (standard)				
8.2 Rechargeable	Custom Lithium-Ion (Li-Ion) battery pack 2 × D-Cell (MN1300 / LR20) Nickel Metal Hydride (NiMH) batteries				
8.3 Battery run-time (continuous)⁵	Li-lon pack: 35 hours 2 × Alkaline D-Cells 13 hours				
8.4 Battery chemistry identification	Lithium-Ion pack:Automatic sensingNiMH / Alkaline:Software switchable				
8.5 Charging options (Li-lon pack)	Mains charger:100-250 Volts AC, 50/60 HzAutomotive charger:12-24V DC				
8.6 Charging time (Li-Ion pack)	3 hours to 80% from empty with maintenance trickle charging thereafter				

# 9. Physical Characteristics

9.1 Design	Ergonomic, balanced and lightweight design for comfortable use during extended surveys
9.2 Construction	Injection Molded ABS Plastic
9.3 Weight	With Lithium-Ion battery pack fitted: Metric: 1.8kg Imperial: 4.0lb
	With D-cell alkaline batteries fitted: Metric: 1.9kg Imperial: 4.2lb

9.4 Ingress Protection rating	IP65 Protected against dust ingress and jets of water <sup>6</sup> applied from any direction
9.5 Display type	High contrast custom made monochrome LCD
9.6 Audio options	Built-in waterproofed speaker 3.5mm headphone socket
9.7 Operating temperature <sup>7</sup>	Metric: -20°C to 50°C Imperial: -4°F to 122°F
9.8 Storage temperature	Metric: -20°C to 70°C Imperial: -4°F to 158°F
9.9 Unit dimensions	Metric: 648mm × 286mm × 125mm Imperial: 25.5" × 11.3" × 4.9"
9.10 Shipping dimensions	Metric: 700mm x 260mm × 330mm Imperial: 27.6" x 10.2" x 13"
9.11 Shipping weight (with batteries fitted)	Metric: 2.6kg Imperial: 5.7lb

# 10. RD Manager<sup>™</sup> Online Supporting PC Software

10.1 Operating System Compatibility	Microsoft <sup>®</sup> Windows <sup>®</sup> 10 64-bit
10.2 Locator system compatibility	Radiodetection RD7200 and RD8200 Precision Locators
10.3 Functions	<ul> <li>Locator configuration</li> <li>eCert<sup>™</sup> remote calibration certification</li> <li>Factory calibration certificate retrieval</li> <li>Usage-logging data collation and export</li> <li>Survey measurements data collation and export</li> <li>User account management</li> <li>Locator software update</li> </ul>
10.4 Data export formats	.kml for Google <sup>®</sup> Maps .csv for database and spreadsheet applications .xls / .xlsx for Microsoft <sup>®</sup> Excel <sup>®</sup>
10.5 KML data export options	Filter usage-logging and survey measurement points on Google <sup>®</sup> maps. Select data to be tagged. Customize icon type / color, label type / color, line type / color

# 11. Warranty and Maintenance

11.1 Manufacturer's warranty duration	3 years standard, on registration					
11.2 Recommended calibration and maintenance schedule	ion and Annual, or at the beginning / end of a lease period if earlier					
11.3 eCert remote calibration	<ul> <li>Remote calibration certification using an internet connection to Radiodetection</li> <li>Recommended schedule: annual, or at the beginning / end of a lease period</li> </ul>					
11.4 CALSafe <sup>™</sup>	<ul> <li>Can be enabled to prevent the locator operating when beyond a defined calibration / maintenance schedule</li> <li>Disabled by default</li> <li>30-day countdown to calibration due date</li> </ul>					
11.5 Enhanced Self-Test	On-unit Applies test signals to locate circuitry to confirm correct operation, as well as the typical tests for screen and DSP functions. Recommended schedule: weekly, or before each use.					
11.6 Storage recommendation	Store in a clean and dry environment. Ensure all terminals and connection sockets are clean, free of debris and corrosion and are undamaged					

Clean with a soft, moistened cloth.

- Do not use
- Abrasive materials or chemicals
- High pressure jets of water

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

### 12. Certification and Compliance

12.1 Standards	
Safety:	EN 61010-1:2010
EMC:	EN 61326-1:2013 EN 300 330-2 (V1.5.1) EN 300 440-2 (V1.4.1) EN 301 489-3 (V1.6.1) EN 301 489-17 (V2.2.1)
Environmental:	EN 60529 1992 A2 2013 EN 60068-2-64:2008 Test Fh ESTI EN 300 019-2-2:1999 (per table 6) EN 60068-2-27:2009 (Test Ea) ESTI EN 300 019-2-2:1999 (per table 6)
12.2 European directives	Radio Equipment Directive – 2014/53/EU Low Voltage Directive – 2014/35/EU EMC Directive – 2014/30/EU RoHS – Restriction of Hazardous Substances – Directive – 2011/65/EU Declaration of conformity is available from www.radiodetection.com
12.3 Radio	FCC, IC
12.4 Environmental	WEEE compliant ROHS compliant
12.5 Manufacturing	ISO 9001:2015

### 13. Compatible Accessories

Accessory	Part description	Part number
13.1 Lithium-Ion battery packs	Li-Ion rechargeable battery mains kit (Includes mains charger) Li-Ion rechargeable battery pack (no charger)	10/RX-MBATPACK-LION-K 10/RX-BATPACK-LION
13.2 Lithium-Ion battery chargers	Li-Ion automotive charger Li-Ion mains charger	10/RX-ACHARGER-LION 10/RX-MCHARGER-LION
13.3 Alkaline battery trays	2 × D Cell battery tray (MN1300 / LR20)	10/RX-2DCELL-TRAY
13.4 Transportation and storage accessories – For combined locator and transmitter	Soft Carry Bag Wheeled Flight Case Hard Case	10/LOCATORBAG 10/RD7K8KCASE 10/RD7K8KCASE-USA
13.5 Locator signal clamps – For identification and location of utilities	Metric:50mm Locator ClampImperial:2" Locator ClampMetric:100mm Locator ClampImperial:4" Locator ClampMetric:130mm Locator ClampImperial:5" Locator ClampCD and Current Measurement Clamp	10/RX-CLAMP-50 10/RX-CLAMP-2 10/RX-CLAMP-100 10/RX-CLAMP-4 10/RX-CLAMP-130 10/RX-CLAMP-5 10/RX-CD-CLAMP

	Accessory	Part description						Part number
	Signal stethoscopes – To locate and identify individual utilities e.g. within walls, congested areas or when cables/utilities are in close proximity to each other	High Gain Stetho Large Stethosco Small Stethosco CD Stethoscope	pe pe	10/RX-STETHOSCOPE-HG 10/RX-STETHOSCOPE-L 10/RX-STETHOSCOPE-S 10/RX-CD-STETHOSCOPE				
3.7	Sondes Battery powered signal transmitters for tracing or	Diameter		meter	Range		Freq	
	transmitters for tracing or locating non-conductive utilities		mm	In	m	Ft	(Hz)	
		S6 Microsonde	6	1/4	2	61⁄2	33k	10/SONDE-MICRO-33
		S9 Minisonde	9	3/8	4	13	33k	10/SONDE-MINI-33
		S13 Super Smal Sonde	13	1⁄2	2	<b>6</b> ½	33k	10/SONDE-S13-33
		S18 Small Sonde	18	3/4	4	14	33k	10/SONDE-S18A-33
							33k	10/SONDE-STD-33
		Standard C-Sonde	39	1½	5	16½	8k	10/SONDE-STD-8
							512	10/SONDE-STD-512
		Sewer Sonde	64	21/2	8	26	33k	10/SONDE-SEWER-33
		Super Sonde	64	21/2	15	50	33k	10/SONDE-SUPER-33
		Flexi Sonde	23	7/8	6	20	512	10/SONDE-BENDI-512
13.8	Submersible antennas	640Hz Submers	512Hz Submersible DD Antenna 640Hz Submersible DD Antenna 8kHz Submersible DD Antenna			10/RX-SUBANTENNA-512 10/RX-SUBANTENNA-640 10/RX-SUBANTENNA-8K		
	FlexiTrace <sup>™</sup> – Use with a transmitter to trace small diameter pipes	FlexiTrace 50m / 165' FlexiTrace 80m / 260'			10/TRACE50-GB 10/TRACE80-GB			
	Flexrods – Fibreglass rod used for	Length Diameter						
	propelling Radiodetection sondes through pipes to trace the path and locate blockages	m	Ft	n	nm	In		
		50	160	4	.5	3/1	6	10/FLEXRODF50-4.5
		80	260	4	.5	3/1	6	10/FLEXRODF80-4.5
		50	160	7		1/4		10/FLEXRODF50-7
		100	320	7		1/4		10/FLEXRODF100-7
		150	485	7		1/4		10/FLEXRODF150-7
		60	195	9		3/8		10/FLEXRODF60-9
		120	390	9		3/8		10/FLEXRODF120-9
	A-Frame – Used for locating sheath faults on cables and coating defects on pipelines	A-Frame (includes A-Frame Lead) A-Frame Bag			10/RX-AFRAME 10/RX-AFRAME-BAG			
13.12	Headphones	Recommended f	or use in	noisy er	vironment	s		10/RX-HEADPHONES
13.13	Calibration Certificates	Locator Calibrati locator order)	on Certific	cate, pe	unit (requ	lest with	initial	97/RX-CALCERT
	eCert <sup>™</sup> Calibration Credit						10/RX-ECERT	

All specification are measured in test conditions, at 21°C / 70°F, and fitted with 2 × good quality alkaline batteries unless otherwise noted.

<sup>1</sup> Based on volumetric testing at a known fixed depth. True depth accuracy depends on factors such as ground composition, utility characteristics and the locate frequency / signal strength employed. Always follow local safe digging guidelines.

<sup>2</sup> The RD8200 will locate to greater depths in the right conditions, but depth accuracy will be compromised. Depth measurement will not be displayed beyond these depths.

<sup>3</sup> Tested with clear line-of-sight. Range is dependent on electrical environment and weather conditions. For optimum range, face the locator toward the transmitter and raise the transmitter 2' / 60cm from the ground.

<sup>4</sup> RD Map+ required with premium subscription.

<sup>5</sup> To provide repeatable measurements, run-time is measured with GPS and Bluetooth functions switched to 'off'.

<sup>6</sup> Water projected by a nozzle at a pressure of 30kPa /0.3 bar / 4.4 psi in accordance with BS EN 60529 1992 A2 2013.

<sup>7</sup> At very low temperatures, battery life will be degraded, LCD performance may slow and measurement precision may reduce.

# **Tx transmitter specification**

Precison locator range



# Tx Precision Locate Transmitters Specification

# 1. Product Summary

1.1	Product Overview:	The Tx family of signal transmitters has been designed to complement Radiodetection's advanced high-precision cable and pipe locators including the RD8100, RD7100, marker locator and PCM ranges				
1.2	Product Descriptions:	Signal transmitter Multi-function transmitter Cable and pipe transmitter				
1.3	Intended Use:	Use with a locator or marker locator from Radiodetection's precision locator range to find and trace cables and pipes. Use with a PCM locator to boost the locate signal for a pipeline survey.				
1.4	Standard Equipment:	<ul> <li>Transmitter</li> <li>Integrated tool tray</li> <li>Earth spool</li> <li>Earth spike</li> <li>Direct connection leads</li> <li>Magnet</li> </ul>				

### 2. Performance

		Tx-1	Tx-5	Tx-5 iLOC	Tx-10	Tx-10 iLOC
2.1	Max power output:	1W	5W	5W	10W	10W
2.2	Max voltage output:	90V	90V	90V	90V	90V
2.3	Max current output:	0.5A	0.5A	0.5A	0.5A	0.5A
2.4	Induction field strength:	0.7	0.9	0.9	1	1

### 3. Power Output

3.1	Induction settings	10%, 20%, 50% and 100% of maxim	ium					
3.2	Direct Connection	CD Frequencies*						
		256Hz/512Hz	35mA	70mA	140mA	245mA		
		285Hz/570Hz	35mA	70mA	140mA	275mA		
		320Hz/640Hz	35mA	70mA	140mA	305mA		
		380Hz/760Hz	35mA	70mA	140mA	350mA		
		460Hz/920Hz	35mA	70mA	140mA	350mA		
		Single Frequencies*						
		163Hz – 4 KHz	10mA	50mA	200mA	500mA		
		8kHz -33KHz	5mA	20mA	100mA	500mA		
		65kHz - 200Hz	2mA	10mA	50mA	200mA		

# 4. Transmit Functions

4.1 Active Frequencies*	Tx-1	Tx-5	Tx-5 iLOC	Tx-10	Tx-10 iLOC
163Hz					DC
208Hz					DC
273Hz					DC
340Hz					DC
400Hz					DC
440Hz					DC
460Hz					DC
480Hz					DC
484Hz					DC
491Hz					DC
512Hz	DC	DC	DC	DC	DC
560Hz				20	DC
570Hz	DC	DC	DC	DC	DC
577Hz	DC	DC	DC	DC	DC
584Hz	DC	DC	DC	DC	DC
					DC
624Hz	<b>D</b> 0	<b>D</b> 0	<b>D</b> 0	<b>D</b> 0	
640Hz	DC	DC	DC	DC	DC
760Hz	DC	DC	DC	DC	DC
815Hz					DC
870Hz	DC	DC	DC	DC	DC
920Hz	DC	DC	DC	DC	DC
940Hz	DC	DC	DC	DC	DC
54012	Induction	Induction	Induction	Induction	Induction
982Hz					DC
					Induction
1090Hz					DC
					Induction
1450Hz					DC
					Induction
	DC	DC	DC	DC	DC
4kHz (4096Hz)	Induction	Induction	Induction	Induction	Induction
	Clamp	Clamp	Clamp	Clamp	Clamp
	DC	DC	DC	DC	DC
8kHz (8192Hz)	Induction	Induction	Induction	Induction	Induction
	Clamp	Clamp	Clamp	Clamp	Clamp
044011-					DC
8440Hz					Induction
	DC	DC	DC	DC	Clamp DC
9.8kHz (9820Hz)	Induction	Induction	Induction	Induction	Induction
9.0KHZ (9020HZ)	Clamp	Clamp	Clamp	Clamp	Clamp
	DC	DC	DC	DC	DC
33kHz (32,768Hz)	Induction	Induction	Induction	Induction	Induction
UNI 12 (U2, 1 UUI 12)	Clamp	Clamp	Clamp	Clamp	Clamp
	DC	DC	DC	DC	DC
65kHz (65,536Hz)	Induction	Induction	Induction	Induction	Induction
	Clamp	Clamp	Clamp	Clamp	Clamp
	Oldinp	Oldinp	Clamp	Olamp	DC
82kHz					Induction
					Clamp
	DC	DC	DC	DC	DC
83kHz (83,077Hz)	Induction	Induction	Induction	Induction	Induction
<u> </u>	Clamp	Clamp	Clamp	Clamp	Clamp
	DC	DC	DC	DC	DC
131kHz (131,072Hz)	Induction	Induction	Induction	Induction	Induction
· · · · · · · · · · · · · · · · · · ·	Clamp	Clamp	Clamp	Clamp	Clamp
	DC	DC	DC	DC	DC
200kHz	Induction	Induction	Induction	Induction	Induction
	Clamp	Clamp	Clamp	Clamp	Clamp

(\*) DC = Direct Connection

4.2 Fault Find	Tx-1	Tx-5	Tx-5 iLOC	Tx-10	Tx-10 iLOC
8kHz (8192Hz)		•	•	•	•
CDFF				•	•

4.3 Current Direction	Tx-1	Tx-5	Tx-5 iLOC	Tx-10	Tx-10 iLOC
219.9Hz / 439.8Hz				•	•
256Hz / 512Hz				•	•
280Hz / 560Hz				•	•
285Hz / 570Hz				•	•
320Hz / 640Hz				•	•
380Hz / 760Hz				•	•
460Hz / 920Hz				•	•
680Hz / 920Hz				•	•
680Hz / 340Hz (INV)				•	•
800Hz / 400Hz (INV)				•	•
920Hz / 460Hz (INV)				•	•
968Hz / 484Hz (INV)				•	•
1168Hz / 584Hz (INV)				•	•
1248Hz / 624Hz (INV)				•	•
4096 / 8192Hz 'MFCD'				•	•

4.4	Information displayed	<ul> <li>Battery level indicator</li> <li>Operation mode readout</li> <li>Standby icon</li> <li>Output level indicator</li> <li>Mode of operation indication <ul> <li>Induction</li> <li>Direct connection</li> </ul> </li> </ul>
		<ul> <li>Direct connection</li> <li>Clamp mode</li> <li>DC power connected indicator</li> <li>A-frame: Indicates when the transmitter is in Fault-Find Mode</li> </ul>
		<ul> <li>CD Mode: Indicates when the transmitter is in Current Direction Mode</li> <li>Voltage warning indicator: Indicates that the transmitter is outputting potentially hazardous voltage levels or high voltage across DC output leads</li> </ul>
		<ul> <li>Volume level indicator</li> <li>Pairing icon: Appears when the transmitter and locator are connected via iLOC</li> <li>Bluetooth icon: Indicates status of Bluetooth connection. Flashing icon means pairing is in progress</li> </ul>
		Measurements: Voltage, current, power and impedance

### 5. Transmitter Enhancements\*

5.1	Current Direction™ (CD)	Provides current direction (CD) signals to enable the locator to differentiate individual utilities
5.2	iLOC™	Allows remote control of the transmitter from a compatible locator, up to 450m (1400 feet) away1 (Tx-5B and Tx-10B)
5.3	SideStep™	Shifts the locate and transmitter frequency by several Hz, out of the bandwidth of other locate signals that may be interfering with the locate (Tx-5B and Tx-10B)
5.4	SideStep Auto	Automatically selects the best frequency to use based on the load impedance (works only a direct connect mode)
5.5	Fault Find	Enables the use of an accessory A-Frame with a compatible locator to detect and pinpoint pipe's coating and insulation faults and cable's sheath fault
5.6	Boost	Sets the transmitters to output its maximum output power indefinitely or for a predefined period of time
5.7	Maximum Voltage Selection	Allow the user to increase the voltage, and the current, output to a maximum of 90 Vrms
5.8	Eco Mode	Automatically reduces the output power to allow full depletion of the alkaline batteries. An audio and visual warning provides user feedback (only available with alkaline batteries)
5.9	Power Selector	Restricts the power output of the transmitter to a predefined level
5.10	Automatic overvoltage protection system	In the event of an erroneous direct connection to a high voltage line (up to 250V), a warning symbol is displayed advising the operator to take action

(\*) Model dependent

# 6. Configurability\*

6.1	Languages	Fourteen: English, French, German, Dutch, Polish, Czech, Slovakian, Spanish, Portuguese, Swedish, Italian, Turkish, Russian, Hungarian
6.2	Active frequency selection	All active frequencies available can be individually enabled or disabled
6.3	Locator mode	Selects available Active frequencies and CD pairs depending on the locator used
6.4	Volume Control	Mute, 1,2 and 3
6.5	Battery Type	Li-Ion, Ni-MH or Alk
6.6	Power Selector	1,2,3,5 and 10W
6.7	Max Voltage	Low or High
6.8	SideStep Auto (OPT F)	Start
6.9	Boost	ON, 5, 10 and 20 Min
6.10	Bluetooth:	On, Off, Reset and Pair
	del dependent	

(\*) Model dependent

# 7. Connectivity\*

7.1	Wireless connections	Bluetooth class 1
7.2	Wireless range <sup>3</sup> :	Up to 450m /1400'
7.3	Wired connections	Mini-USB 2.0: Connect to a PC to update transmitter
		Accessory port: Connect Radiodetection accessories
		Power In: Connects to an external power supply

(\*) Model dependent

### 8. Power options

8.1	Alkaline or NI-MH	8x D cells
8.2	Rechargeable battery	Custom Lithium-Ion (Li-Ion) battery pack
8.3	Battery run-time (continuous) <sup>2</sup>	Alk: 4 hours
		NI-Mh: 7 hours
		Li-Ion: 8 hours
8.4	DC IN	12V, 3A

### 9. Physical Characteristics

9.1	Construction	Injection Molded ABS Plastic
9.2	Weight	With Alkaline: 3.9 kg /8.6 lb
		Li-Ion: 3.8 kg / 8.3 lb
9.3	Dimensions	350x220x220 mm / 30.8x8.7x8.7 in
9.4	Ingress Protection rating	IP65: Protected against dust ingress and jets of water3 applied from any direction
9.5	Display type	High contrast custom made monochrome LCD
9.6	Audio options	Built-in water-resistant speaker
9.7	Operating temperature <sup>4</sup>	-20°C to 50°C / -4°F to 122°F
9.8	Storage temperature	-40°C to 70°C / -40°F to 158°F

# 10. Centros<sup>™</sup> Manager PC Software

10.1	Operating System Compatibility:	Microsoft® Windows® 7, 8, 8.1, 10, 32 and 64-bit versions
10.2	Function	Software update

### 11. Warranty and Maintenance

11.1	Manufacturer's warranty duration:	3 years standard, on registration
11.2	Recommended calibration and maintenance schedule:	Annual, or at the beginning / end of a lease period if earlier
11.3	Storage recommendation:	Store in a clean and dry environment.
		Ensure all terminals and connection sockets are clean, free of debris and corrosion and are undamaged
11.4	Cleaning:	Clean with a soft, moistened cloth. Do not use:
		Abrasive materials or chemicals
		High pressure jets of water
		If using this equipment in foul water systems or other areas where biological hazards may be present, use an appropriate disinfectant.

## 12. Certification and Compliance

12.1	Standard	
	Safety	EN 60950-1:2006+A2:2013
		EN 60950-22:2006
	EMC	EN 61326-1:2013
		EN 300 330-2 (V1.5.1)
		EN 301 489-3 (V1.6.1)
		EN 301 489-17 (V2.2.1)
12.2	European directives:	Radio Equipment 2014/53/Eu
		ROHS Directive: 2011/65/EU
		Declaration of conformity is available from www.radiodetection.com
12.3	Radio	FCC, IC
12.4	Environmental	WEEE compliant ROHS compliant
12.5	Manufacturing	ISO 9001:2008

### 13. Compatible Accessories

Accessory	Part description	Part number
Lithium-Ion battery packs	Li-Ion rechargeable battery mains kit (Includes mains charger)	10/TX-MBATPACK-LION-K
	Li-Ion rechargeable battery pack	10/TX-BATPACK-LION
	(no charger)	
LPC	Live plug connector with US, UK or EU mains plug	10/TX-LPC-xx
For connecting the transmitter to domestic mains socket		(xx = US, UK or EU)
Cable connector	Live Cable Connector with Crocodile clips	10/TX-LCC
Lithium-Ion battery chargers	Li-Ion automotive charger	10/TX-ACHARGER-LION
	Li-Ion mains charger	10/TX-MCHARGER-LION
Spare battery tray	8 × D Cell battery tray (MN1300 / LR20)	10/TX-8DCELL-TRAY
Transportation and storage accessories	Soft Carry Bag	10/LOCATORBAG
For combined locator and transmitter	Wheeled Flight Case	10/RD7K8KCASE
	Hard Case	10/RD7K8KCASE-USA
Transmitter signal clamps	Metric: 50mm Locator Clamp	10/TX-CLAMP-50
For identification and location of utilities	Imperial: 2" Locator Clamp	10/TX-CLAMP-2
	Metric: 100mm Locator Clamp	10/TX-CLAMP-100
	Imperial: 2" Locator Clamp	10/TX-CLAMP-4
	Metric: 130mm Locator Clamp	10/TX-CLAMP-130
	Imperial: 5" Locator Clamp	10/TX-CLAMP-5
	Metric: 215mm Locator Clamp	10/TX-CLAMP-8.5
	Imperial: 8.5" Locator Clamp	10/TX-CLAMP-215
	Signal clamp extension rod	10/TX-CLAMP-EXROD
Flexitrace™	FlexiTrace 50m / 165'	10/TRACE50-xx
Use with a transmitter to trace	FlexiTrace 80m / 260'	10/TRACE80-xx
small diameter pipes		(xx = GB, D, F  or  NL)

All specifications are measured in test conditions, at 21°C / 70°F

<sup>1</sup> Tested with clear line-of-sight. Range is dependent on electrical environment and weather conditions. For optimum range, face the locator toward the transmitter and raise the transmitter 2' / 60cm from the ground.

<sup>2</sup>To provide repeatable measurements, run-time is measured at 7W and 20C.

<sup>3</sup>Water projected by a nozzle at a pressure of 30kPa /0.3 bar / 4.4 psi in accordance with BS EN 60529 1992 A2 2013

<sup>4</sup> At very low temperatures, battery life will be degraded, LCD screen performance may slow and measurement precision may be reduced

# **RADIODETECTION**

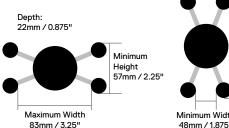
# Accessories for all Radiodetection's **Precision Locators and Tx Transmitters**

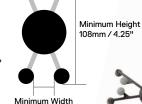
### Locator Accessories

### Phone Holder

Arm and bracket system, quickly/easily attached and removed from any precision locator, that conveniently positions an Android device, giving the operator immediate feedback without impacting the locate operation.

Part No: 10/RX-PHONE-HOLD-KIT





108mm / 4.25

### 7"-8" Tablet Holder

#### Part No: 10/RX-TABLET-7-8-HOLD-KIT

### Locator Clamp

Used with a locator, often in congested areas, to identify individual utilities. Available in 2" (50mm), 4" (100mm), 5" (130mm). Part No: 10/RX-CLAMP-XX (XX= 2, 50, 4, 100, 5, 130)

### Locator CD/CM Clamp

The Current Direction / Current Measurement clamp is used to positively identify one target line amongst a number of parallel utilities and to measure the Transmitter signal current flowing along the utility.



Part No: 10/RX-CD-CLAMP

### **High Gain Stethoscope**

Used to locate individual utilities when either bundled together or in close proximity and where it is not possible to use a locator. Its small size and flat surface make it ideal for locating utilities within walls.

Part No: 10/RX-STETHOSCOPE-HG

### Small Stethoscope

This helps to locate individual utilities which are bundled together. It can be used for identifying inaccessible small cables as well as other utilities.

Part No: 10/RX-STETHOSCOPE-S

### Large Stethoscope

Flexible, 20" (50cm), accessory used to locate and identify accessible utilities and particularly useful in congested areas or when cables are in close proximity to each other.

Part No: 10/RX-STETHOSCOPE-L

### **Current Direction (CD) Telescopic Stethoscope**

This is utilized with a locator having CD to find and identify individual cables, using the CD signal from a Tx-10(B) transmitter. LEDs and direction arrows provide current direction. Other locators without CD can be used to detect and identify cables but without the current direction information.

Part No: 10/RX-CD-STETHOSCOPE



# This is used for locating sheath faults on cables and coating defects on pipelines.

It provides direction and magnitude of fault information on the display of the locator. The A-Frame requires both the locator and transmitter to have the Fault Find feature.

### Part No: 10/RX-AFRAME

Also available with a customized bag. Part No: 10/RX-AFRAME-BAG

### Submersible Double Depth Antenna (SDDA)

This is used for locating underwater cables or pipes. It is supplied with 33' or 164' (10m or 50m) of cable but may be ordered in lengths up to 328' (100m) on request. It is available in 512/640Hz or 8kHz versions. Additional Submersible cable available on request.

640/512Hz or 8kHz Submersible DD Antenna (10m cable).

Part No: 10/RX-SUBANTENNA-XX (XX= 512, 640 or 8K)

Additional Submersible Cable Length (per metre) Part No: 10/RX-SUBANTENNA-CABLE

### Headphones

These can be used with a locator and are recommended for use in noisy environments.



Part No: 10/RX-HEADPHONES

### **Transmitter Accessories**

### Live Plug Connector (LPC)

This accessory is used to easily apply a transmitter signal to a street distribution cable using a standard mains socket. It is available with a UK, US or EU style mains plug. Qualified for use to CAT III 600V, CAT IV 300V.

Part No: 10/TX-LPC-XX (XX= EU, UK, US)

### Live Cable Connector (LCC)

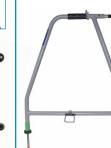
The Live Cable Connector, which may only be used by suitably qualified personnel, is used to apply a transmitter signal to live cables. Qualified for use to CAT III 600V, CAT IV 300V.

Part No: 10/TX-LCC





### SPX





### **Transmitter Clamp**

This clamp is used to apply a transmitter signal to a specific cable or pipe. This is particularly useful where direct connection is not possible, or on live cables that cannot be de-energized. It can be used with the extension rod.

Available in 2" (50mm), 4" (100mm), 5" (130mm) and 8.5" (215mm) diameters.

Part No: 10/TX-CLAMP-XX (XX= 2, 50, 4, 100, 5, 130, 8.5, 215)

### **Transmitter CD Clamp**

This clamp is used to apply a CD or low frequency signal from a transmitter to a cable or pipe. The CD signal is useful for identifying individual utilities in congested areas. This clamp can be used with frequencies below 1kHz.

#### Part No: 10/TX-CD-CLAMP

### Signal Clamp Extension Rod

The 25" (630mm), non-conductive, nylon extension rod is used to extend the reach of the locator/transmitter clamp or small stethoscope. Multiple rods can be connected together to extend the reach.

### Part No: 10/TX-CLAMP-EXTROD

#### **Direct Connection Lead**

Used to apply the transmitter signal directly to utilities.

Part No: 10/TX-DC-LEAD

#### **Direct Connection Lead with Insulated Plug/Socket**

Direct Connection leads, with removable/ replaceable crocodile clips, with 4mm banana plugs for applying the transmitter signal directly to utilities.

Part No: 10/TX-DC-LEAD-BAN

### **Direct Connection Lead with Telecom Crocodile Clip**

Direct Connection leads, with crocodile clip for applying the transmitter signal directly to Telecom cables eg Twisted Pair.

### Part No: 10/TX-DC-LEAD-TELE

### **Spiral Earth Stake**

Used to provide a good connection to earth for the locate signal return path.

Part No: 10/TX-EARTHSTAKE

#### Earth Reel

Extends the length of the Direct Connection black lead if required.

Part No: 10/TX-EARTHLEAD

### **Neodymium Magnet**

This high strength magnet can be attached to metallic pipes, street furniture, etc., to provide a convenient connection point for the direct connect lead signal connector.

Part No: 10/TX-MAGNET

### **Transmitter Connection Kit**

Contains the most common connection accessories, including Direct Connection lead. Earth Reel. Earth Stake and High-strength neodymium magnet.

Part No: 10/TX-CONNECTION-KIT

### **Tx-121 Isolation Transformer**

This is used with the Tx range of transmitters to apply a low frequency signal across shorted phases on LV cables to enable location of phase to phase faults. (Rated for connection to CAT IV mains circuits up to 230V phaseto-neutral. Maximum phase to phase voltage differential: 3V RMS at 50/60Hz).

Part No: 10/TX121-XX (XX = DE, EN, FR, NL)

### Accessories for tracing or locating non-conductive utilities

### S6 Microsonde Kit 33kHz

Locatable to 6.5' (2m) and measuring 0.25 x 3.5" (6.4 x 88mm). Supplied as a kit that includes sonde, flexible adaptor, 2 batteries and case.

Part No: 10/SONDE-MICRO-33

Pack of 10 x batteries for S6 Microsonde.

Part No: 10/SONDE-MICRO-BATPACK

#### S9 Minisonde 33kHz

Locatable to 13' (4m) and measuring 0.35 x 5.4" (9 x 138mm). Supplied as a kit that includes sonde, 2 batteries and case.

Part No: 10/SONDE-MINI-33

Pack of 10 x batteries for S9 Minisonde.

Part No: 10/SONDE-MINI-BATPACK

### S13 Sonde Kit 33kHz

Locatable to 8.2' (2.5m) and measuring 0.5 x 2.7" (12.7 x 68mm) with plain end cap. Supplied as a kit that includes two end caps, two batteries and case.

Part No: 10/SONDE-S13-33

Pack of ten spare batteries for S13 Sonde.

Part No: 10/SONDE-S13-BATPACK

### S18 Sonde 33kHz

Locatable to 13' (4m) and measuring 0.70" (18 mm) wide. S18 Sonde is 3.2" (82mm) long.

Part No: 10/SONDE-S18A-33

### Bendi Sonde 512Hz

A 3-section sonde, locatable to 19' (6m) and measuring 0.9 x 18.8" (23 x 478mm), for improved flexibility around pipe and duct corners. Supplied with M10 male end cap.

Part No: 10/SONDE-BENDI-512

### **Standard Sonde**

Locatable to 16' (5m) and measuring 1.53 x 4.13" (39 x 105mm). Available in 3 frequencies: 512Hz, 8kHz and 33kHz.

Part No: 10/SONDE-STD-XX (XX= 512, 8, 33)

#### Sewer Sonde 33kHz

Locatable to 26' (8m) and measuring 2.51 x 6.61" (64 x 168mm).

Part No: 10/SONDE-SEWER-33

### Sonde Shell

External Shell for heavy-duty applications (dia. as Sewer Sonde). Part No: 10/SONDE-SEWER-SHELL

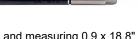
### Super Sonde 33kHz

Locatable to 49' (15m) and measuring 2.51 x 12.51" (64 x 318mm). Part No: 10/SONDE-SUPER-33













- NUMBER CONTRACTOR







### **Range of Sonde Accessories**

Radiodetection has a wide range of accessories including connectors with various size fittings. Please see the Sonde User Guide for more information.

### Flexitrace, Tx-Energized Pushrod

164' (50m) or 260' (80m) small diameter rods that can be inserted into small plastic pipes to trace the route or locate blockages. Energized by a Radiodetection transmitter\*, the user can choose to have either the complete rod length locatable or just the end tip.

\*When using a Tx-5(B) or Tx-10(B) transmitter, some power restrictions apply. Please enquire for details.

Part No: 10/TRACE50-XX (XX = D, F, GB, NL) Part No: 10/TRACE80-XX (XX = D, F, GB, NL)

#### Flexrod

A flexible fiberglass rod used for propelling Radiodetection sondes through pipes to trace the path and locate blockages.

Length		Diame	eter	
m	ft	mm	in	Part No:
50	160	4.5	3/16	10/FLEXRODF50-4.5
80	260	4.5	3/16	10/FLEXRODF80-4.5
50	160	7	1/4	10/FLEXRODF50-7
100	320	7	1/4	10/FLEXRODF100-7
150	485	7	1/4	10/FLEXRODF150-7
60	195	9	3/8	10/FLEXRODF60-9
120	390	9	3/8	10/FLEXRODF120-9

### **RF Marker Balls**

A selection of Marker Balls for Marker Locators (box of 30).

Part No:
61/OMPOWER-MK2
61/OMWATER-MK2
61/OMSANITARY-MK2
61/OMTEL-MK2
61/OMGAS-MK2
61/OMCABLE-MK2
61/OMGENERAL-MK2
61/OMEUROPOWER-MK2

### **Power Options**

### Locator Power Accessories and Spares

### **Rechargeable Battery Packs**

Cost effective alternatives to alkaline batteries, offering superior battery life, particularly in colder climates.

### Li-Ion Rechargeable Battery Pack<sup>1, 2</sup>

Contains Lithium Ion rechargeable battery. Part No: 10/RX-BATPACK-LION

### **Li-Ion Mains Charger**

Charges a Li-Ion battery pack from a mains supply (90-240Vac).

CN, EU, UK, AU and US and options are available. Part No: 10/RX-MCHARGER-LION-XX (XX = CN, EU, UK, AU, US)

### Li-Ion Automotive Charger

Charges a Li-lon battery pack from a 12V automotive socket.

Part No: 10/RX-ACHARGER-LION

### Li-Ion Rechargeable Battery Mains Kit

Contains Li-Ion rechargeable battery and mains charger (90-240Vac).

Part No: 10/RX-MBATPACK-LION-K-XX(XX = CN, EU, UK, AU, US)

### Li-Ion Rechargeable Battery Pack with Automotive Charger

Part No: 10/RX-ABATPACK-LION-K

Li-Ion Rechargeable Battery Pack with Mains and Automotive charger (includes power lead)

Part No: 10/RX-MABATPACK-LION-K-XX (XX = CN, EU, UK, AU, US)

### NiMH Rechargeable Battery Pack<sup>1, 3</sup>

Contains Nickel Metal Hydride rechargeable battery.

Part No: 10/RX-BATPACK-NIMH

### **NiMH Mains Charger**

Charges a NiMH battery pack from a mains supply (90-240Vac).

Part No: 10/RX-MCHARGER-NIMH-XX (XX = CN, EU, UK, AU, US)

### **NiMH Automotive Charger**

Charges a NiMH battery pack from a 12V automotive socket.

Part No: 10/RX-ACHARGER-NIMH

### **NiMH Rechargeable Battery Mains Kit**

Contains NiMH rechargeable battery and mains charger with mains lead (90-240Vac).

10/RX-MBATPACK-NIMH-K-XX (XX = CN, EU, UK, AU, US)

### **NiMH Rechargeable Battery Kit and Chargers**

Contains NiMH rechargeable battery and both mains with mains lead (90-240Vac) and automotive 12V chargers.

Part No: 10/RX-RECHARGEKITALL-XX (XX = CN, EU, UK, AU, US)

### **Alkaline Battery Trays**

Replacement battery trays for Radiodetection's Precision Locators.

### 2-Cell Battery Tray<sup>1, 3</sup>

Holds 2x D Cell / LR20.

Part No: 10/RX-2DCELL-TRAY

### 3-Cell Battery Tray<sup>2</sup>

Holds 3x D Cell / LR20.

Part No: 10/RX-3DCELL-TRAY

- 1. Compatible with RD8200, RD7200, RD8100 and RD7100 Cable and Pipe Locators.
- 2. Compatible with RD8100, RD7100, RD8000 and RD7000 RF Marker Locators.
- 3. Compatible with RD8000 and RD7000+ Cable and Pipe Locators.

### **Transmitter Power Accessories and Spares**

### **Lithium-Ion Battery Packs**

A rechargeable battery pack is a cost effective alternative to using alkaline batteries and offers superior battery life, particularly in colder climates.

### **Transmitter Rechargeable Battery Pack**

This is a spare transmitter rechargeable battery pack.

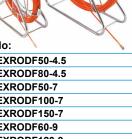
Part No: 10/TX-BATPACK-LION































### Mains Charger for the Transmitter Li-Ion Rechargeable Battery

This convenient unit charges a transmitter rechargeable battery pack from the mains (90-240Vac).

CN, EU, UK, AU and US and options are available.

Part No: 10/TX-MCHARGER-LION-XX (XX = CN, EU, UK, AU, US)

### Automotive Charger for the Transmitter Li-Ion Rechargeable Battery



This convenient 12V unit is used to charge a transmitter rechargeable battery pack from an automotive cigarette lighter socket.

Part No: 10/TX-ACHARGER-LION

### Li-Ion Rechargeable Battery Mains Kit

This kit includes a transmitter rechargeable battery pack and a universal mains charger. CN, EU, UK, AU and US and options



Part No: 10/TX-MBATPACK-LION-K-XX (XX = CN, EU, UK, AU, US)

Note that Li-lon rechargeable packs cannot be charged in the transmitter.

### Mains Power Supply Unit

are available.

This convenient alternative to batteries powers the transmitter directly from the mains. CN, EU, UK, AU and US and options are available.

Part No: 10/TX-MPSU-XX (XX = CN, EU, UK, AU, US)

### **Automotive Power Supply Unit**

This kit contains a 12V Car Power Lead with Isolation Transformer for convenience and safety.

Part No: 10/TX-APSU

### **D** Cell Batteries

Alkaline Battery (D-Cell).

#### Part No: 10/1DCELL-ALK



Set of two rechargeable NiMH batteries (D-Cell 5000mAh).

Part No: 10/2DCELL-R-NIMH Universal charger with UK plug (AAA to D-cell).

Part No: 26/UNICHARGER

### Transport and Storage Accessories

A range of carrying cases for combined locator and transmitter.

### Soft Carry Bag

Universal soft bag designed to carry all locators, alongside a transmitter and accessories. Large paint holders on the outside carry even large 'tallboy' cans. Reflective chevrons reduce the risk of accidental damage.



Part No: 10/LOCATORBAG

### Hard Case Options

Sturdy hard cases designed to protect and transport precision locators with transmitters and accessories. Regional variations may exist, including wheeled versions.



Part No: 10/RD7K8KCASE

### Backpack and Tx Bag

The backpack has side pockets for tools and paint cans and its sleeve holds a precision locator. The Tx Bag fits in the backpack without the tool tray.

Available separately or as a set.

Part Numbers: 10/LOCATOR-BACKPACK 10/TX-BAG 10/LOCATOR-BACKPACK-SET

### **Remote Calibration and Software**

### eCert<sup>™</sup> Calibration Credit

Verify and certify the calibration of the locator over the internet

using the RD Manager<sup>™</sup> PC software package, without returning the unit to a service center.

setup   Survey Measurement	ts Data Logging Software Update Calibration Account Advan	ced Setup		
5 Factory Certificate	🙀 Run eCert** 🔍 View 🗙 Delete	eCert Credits 6		
10/81PTLG-63	/81PTLG-63 V T SN Filter			
Date	Type Status			

RD7100 and RD8100 locators: Part No: 10/ECERT-RD71/RD81 All RF Marker locators: Part No: 10/ECERT-MARKERS

### eCAL<sup>™</sup> Calibration Certificate Verification Key

Part of Radiodetection's Centros<sup>™</sup> Manager application, eCAL<sup>™</sup> allows the user to remotely validate the calibration of locator, providing confidence that the locator is performing to the very same high standards

Certific	ate of Cal	libration						PAS
Product: RC	BK1RX							
Serial Numi	bert					0	late of Issue:	03/03/201
Order Number:						Calibration Due Date: 04/03/2017		
	Radiodetection Calibration Data:					Date of Reference Calibration: 28/10/2015		
			J.Western Drive	Bristol, BS14 Gr	4F.United Kingdom			
	ital Temperatury						Relative Ha	
Test Proced	lure: RD8K1 GP	S Full Test (TE	ST4) R283.xls				Re	vision: 7.0
Technician I	D: production sed at reference	e Reference	Calibration					
Technician I Equipment u Model M	D: production ned at reference Aumber	e Calibration: Mor	lel Description			Last Cal Date		ue Date
Technician I Equipment u Model N 332	D: production ned at referenc Aumber 20A	e Calibration: Mor Agient	lel Description		MY44057532	02/07/2015	02/0	7/2016
Technician I Equipment u Model M	D: production sed at referenc Aumber 20A D1A	e Calibration: Mo Aglent Aglent	lel Description	ter			02/0	
Technician I Equipment u Model N 332 344 QL3	D: production sed at reference Aumber 20A 21A 35TP	e Calibration: Mo Aglent Aglent	lel Description Function Geneci Digital Multime	ter	MY44057532 MY47002138	02/07/2015	02/0	7/2018 7/2018
Technician I Equipment u Model N 332 344 QL3 Calibration Frequency	D: production sed at reference Aumber 20A 15TP 1 Results: H Ratio High	e Calibration: Mor Aglent Aglen Thurby T H Ratio Low	tel Description Function Gener: Digital Multimer handar Power S V Ratio High	v Ratio Low	MY44057532 MY47002138 335621 Measurement Uncertaint	02/07/2015 02/07/2015 29/01/2015 y High Limit	C2/C C2/C 29/C Low Limit	7/2018 7/2018 1/2018 Pass/Fai
Technician I Equipment u Model N 3322 344 QL35 Calibration	D: production sed at reference Aunber 20A 11A 15TP n Results:	e Calibration Mo Agient Agient Thurby T	lel Description Function Genera Digital Multime handar Power S	Ner upply	MY44057832 MY47002136 335621	02/07/2015 02/07/2015 29/01/2015	02/0 02/0 29/0	7/2018 7/2018 1/2018

as it did when it first left the factory.

RD8000<sup>™</sup>, RD7000<sup>™</sup>+, RD7000 and RD5000<sup>™</sup> locators: **Part No: 10/RD7K8KECAL** 

### RD MAP+<sup>™</sup>

Android Map&Share<sup>™</sup> app compatible with RD8200, RD8100 Cable and Pipe locators and RD8100/RD7100 RF Marker locators.

Available to download free of charge from Google Play store.

### RD Manager<sup>™</sup>

Windows 64 bit application to manage all RD8100, RD7100 and all RF Marker locators.

Available to download free of charge from: www.radiodetection.com/rdmanager

### Centros<sup>™</sup> Manager

Windows 32 and 64 bit application to manage RD8000, RD7000+, RD7000 and RD5000 Cable and Pipe locators.

Available to download free of charge from: www.radiodetection.com/centrosmanager

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To find your local office, please visit: www.radiodetection.com

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#### USER GUIDE

90/NUG012ENG/08



SPX

This user guide covers Radiodetection's range of sondes and associated accessories, including Flexrods and FlexiTraces, which can be used in tracing the paths of pipes, ducts, sewers and drains, and in the precise location of blockages or collapses.

Specifications are provided together with sales part numbers. All depths stated refer to maximum reliable working depth – in some situations, the sondes will function at a greater depth.

Radiodetection supplies a comprehensive range of sondes, some locatable to depths of up to 15m (49') and with diameters ranging from 6.4mm (0.25") to 64mm (2.52"), to suit a wide variety of applications.

Radiodetection sondes can be fitted to a flexible rod for insertion or pushing through pipes etc. and the smaller sondes can be used with jetting machines and 'blown' through pipes or ducts to trace or locate blockages or collapses. An optional plain end cap with eyelet can be purchased for some sondes and is particularly useful when pulling a sonde through a duct on the end of a string, or when 'blown' through ducts.



### S6 Microsonde

A micro sized sonde designed for use in very small diameter applications – particularly microducts. Can be fitted to a flexible rod using M5 female thread or jetted through duct.

Size:	Length 83mm (3.27"), Diameter 6.4mm (0.25")
Location Depth:	: 2m (6.5')
Battery:	CR425 – providing 8 hours continuous use
Signal:	33kHz continuous
Order codes:	10/SONDE-MICRO-33, comprising sonde, flexible adaptor, 2 batteries, case and user guide
	10/SONDE-MICRO-BATPACK - 10 CR425 batteries in case

### **S9 Minisonde**

A mini sized sonde designed for use in small diameter applications where diameter restricts the use of larger sondes. Can be fitted to a flexible rod using M6 female thread.

C. Carlos and C. Carlos	
Size:	Length 138mm (5.4"), Diameter 9mm (0.35")
Location Depth:	4m (13')
Battery:	CR535 – providing 8 hours continuous use
Signal:	33kHz continuous
Order codes:	10/SONDE-MINI-33, comprising sonde, 2 batteries, case and user guide
	10/SONDE-MINI-BATPACK – 10 CR535 batteries in case

### Super Small Sonde (S13)

A very small sonde designed for use in small conduits and ducts, and capable of passing around tighter bends. Used with flexible rods or blown/pulled through pipe or duct. Supplied as a kit.

Size:	Diameter 12.7mm (0.5")
	Length with plain end cap 70mm (2.75") with M10 male end cap 87mm (3.43")
Location Depth:	2m (6.6')
Battery:	2 x V393 silver oxide providing 8 hours continuous use
Signal:	33kHz continuous
Pressure:	2 bar – 20m (65') of water
Order codes:	10/SONDE-S13-33, comprising sonde body, M10 male threaded end cap, plain end cap, 2 batteries and case
	10/SONDE-S13-BATPACK, pack of 10 V393 batteries

### Small Sonde (S18)

A small sonde particularly useful in small diameter applications. Used with flexible rods or blown/pulled

through pipe or duct.

Available as a complete kit.



Size:	Diameter 18mm (0.7")
	Length with plain end cap 82mm (3.2") with M10 male end cap 97mm (3.8")
Location Depth:	4m (13')
Battery:	2 x CR1/3N or 1 x D1/3N providing 8 hours continuous use
Signal:	33kHz continuous
Pressure:	2 bar – 20m (65') of water
Order codes:	10/S18-33-KIT, comprising sonde body, M10 end cap, plain end cap and 2 batteries
	10/SONDE-S18A-33, sonde body, M10 end cap and 1 battery
	10/S18-PLAINENDCAP
	10/S18-BATTERYPACK, pack of 5 D1/3N type batteries

### **Standard Sonde**

The standard sonde combines compact size and strong signal. Supplied with M10 male threaded end cap and available in 512Hz, 8kHz or 33kHz options.

The 512Hz version is particularly useful for use in cast iron pipes.



Size:	Length 105mm (4.1"), Diameter 39mm (1.5")
Location Depth:	5m (16')
Battery:	1 x AA providing 8 hours continuous use
Signal:	512Hz, 8kHz or 33kHz continuous
Pressure:	2 bar – 20m (65') of water
Order codes:	10/SONDE-STD-512, 512Hz version
	10/SONDE-STD-8, 8kHz version
	10/SONDE-STD-33, 33kHz version
	10/AABATTERYPACK, pack of 5 AA batteries

### **Sewer Sonde**

Robust sonde with a very strong enclosure, suitable for abrasive applications such as for use in sewers.



Size:	Length 168mm (6.6"), Diameter 64mm (2.5")
Location Depth:	8m (26')
Battery:	1 x PP3 providing 15 hours continuous use
Signal:	33kHz continuous or pulsed
	(Reverse battery to change signal)
Pressure:	0.2 bar – 2m (6.6') of water
Order codes:	10/SONDE-SEWER-33
	10/PP3BATTERYPACK, pack of 5 PP3 batteries
	10/SONDE-SEWER-SHELL, external shell for heavy-duty applications

### **Super Sonde**

Robust sonde with a very strong enclosure, suitable for abrasive applications and for use in deep sewers.



Size:	Length 318mm (12.5"), Diameter 64mm (2.5")
Location Depth:	15m (49')
Battery:	1 x PP3 providing 5 hours continuous use
Signal:	33kHz continuous or pulsed (Reverse battery to change signal)
Pressure:	0.2 bar – 2m (6.6') of water
Order codes:	10/SONDE-SUPER-33
	10/PP3BATTERYPACK, pack of 5 PP3 batteries

### BendiSonde

A 3-section sonde that is particularly useful in cast iron pipes and applications where flexibility is required.

Size:	Length 475mm (18.8"), Diameter 23mm (0.9")
Location Depth:	6m (20')
Battery life:	1 x AA providing 15 hours continuous use
Signal:	512Hz continuous
Pressure:	2 bar – 20m (65') of water
Order codes:	10/SONDE-BENDI-512 – sonde with M10 male end cap
	10/AABATTERYPACK, pack of 5 AA batteries

#### Notes:

Sondes are intended to be used for location purposes only and should be used in this way. Failure to do so may result in damage to the sonde and may invalidate the warranty.

Sondes are not classified as 'intrinsically safe' for use in applications where hazardous gases are present.

The majority of Radiodetection sondes transmit on 33kHz and as such can be used with a wide range of Radiodetection locators. For 512Hz and 8kHz sondes, please check with the specific locator user guide for compatibility.

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90/NUG012ENG/08

# RADIODETECTION<sup>®</sup>

# **RD MAP**<sup>™</sup>

### Radiodetection's Precision Locators Map&Share<sup>™</sup> Android app



**RD Map<sup>™</sup>** is the free Android app which supports Radiodetection's Bluetooth Precision locators and allows locator technicians to create detailed maps of buried utilities and share them directly from the field\*.

RD Map uses Google Maps to create detailed maps of sub-surface utilities . Utilities are imported using markers and utility tracks identified using uniformed coloring.

Simple to use measurement tools allow the operator to correct any GPS inaccuracy immediately.

For situations where very high accuracy position measurements are needed RD Map can be set to utilise a compatible Bluetooth GPS/GNSS receiver.

- Free Android utility mapping app
- Available on Google Play Store
- Compatible with RD7100<sup>®</sup> RF marker and all RD8100<sup>®</sup> locators
- Supports Uniform Color coding (American Public Works Association compliant)



- Google Maps for real time map creation and editing
- Works with multiple GPS sources (locator, Android device or external third party GPS/GNSS)
- Use the distance and radius tools to validate the accuracy of your measurements' position
- Share kml or csv files with your favorite application

# **Phone and Tablet support kits**

The phone and tablet support kits are the locator's accessories designed to simplify use of RD Map.

The support kits allow operators to position their Android phone or tablet in the optimal position to maximize visibility and reduce interference with the locator.

The kits can be easily mounted on any existing precision or PCMx locators, with no tools required.

Accessory	Part number
Phone support kit Locator bracket adapter, arms and mobile phone holder– complete kit (see mobile phone holder dimensions 13.4)	10/RX-PHONE-HOLD-KIT
Tablet support kit Locator bracket adapter, arms and tablet holder – complete kit	10/RX-TABLET-7-8-HOLD-KIT
Locator bracket adapter and arms (needs either a Phone or Tablet holder)	10/RX-HOLDER-MOUNT
Mobile phone holder Depth: 22mm / 0.875" Minimum Height 57mm / 2.25" Minimum Width 83mm / 3.25" Minimum Width	10/RX-PHONE-HOLDER
7"-8" Tablet holder (requires a mobile device support bracket and arm)	10/RX-TABLET-7-8-HOLDER
Bracket adapter for RAM <sup>®</sup> mounts	10/RX-RAM-ADPT
Spare set of 2 O-rings	10/RX-RAM-ADPT-ORING

### Visit www.radiodetection.com/rdmap

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F LMX100

# LOCATE & MARK<sup>®</sup> Ground Penetrating Radar for Utility Locating

*₩ LMK200* 

# LMX<sup>®</sup> System Overview

The simple, affordable way to Locate & Mark<sup>™</sup> utilities in the field

LMX Ground Penetrating Radar (GPR) systems are designed & optimized for utility locating, making the LMX a natural addition to your locating workflow.

### LMX® GPR systems complement traditional pipe and cable locators and allow you to Locate & Mark®:

- Metal utilities, including pipes and cables
- Non-metallic pipes, including PVC and asbestos cement
- Concrete storm and sewer systems
- Utilities where installed tracer wiring has failed
- Underground storage tanks and drainage tiles
- Septic system components
- Non-utility structures such as vaults, foundation walls and concrete pads

# High visibility touch screen display unit

- Free lifetime system software updates
- User selectable languages
- Metric and US Standard units



- Patented ultra-wideband (UWB) 250 MHz GPR antenna
- DynaT™ for Dynamic Target enhancement
- Offers perfect balance of depth penetration (up to 8m/26 ft) & high resolution

### Lead Acid Gel Cell Battery

- Long lasting
- Swappable



Produce instant on-site reports from your display unit



### Integrated GPS

Integrated GPS receiver for geo-referencing data

### Lightweight Fiberglass Cart Frame

- No metal parts that would interfere with GPR signals
- Rugged, all-terrain cart with integrated odometer, easily maneuverable over any surface



0

USB for easy data transfer



# LMX200<sup>™</sup> Features

# The premier GPR locating tool in the market today

LMX200 increases locate confidence by adding depth slice imaging and in-field interpretations

# Color-coded field interpretations

Classify your targets in real-time by selecting a color option and touching the screen

### **Grids & Depth Slices**

Complete coverage of complex areas

# Flexible & guided grid collection

The LMX200™ guides you through setup with pre-selected grid sizes. Stop lines early, or skip lines.

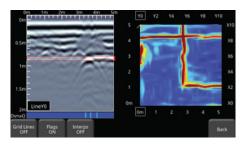
### In-field Depth slices

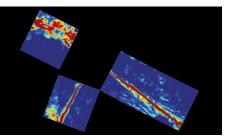
Process grid data into depth slices and move down through your data to visualize targets at different depths.

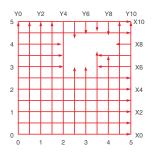
### Depth Slice through multiple grids on-site

In MapView, visualize all your grids at once for a complete picture.









Evit

### Obstacle avoidance

System guides data collection around an obstacle in your grid.

# Features unlocked with GPS

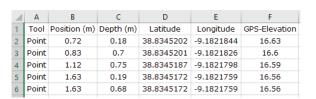
# SplitView - Real-time MapView during data collection

- Ensure full site coverage by visualizing your survey path
- See interpretations as you add them
- Review data for subtle targets that you may have missed
- Know your location, and go back to areas of interest

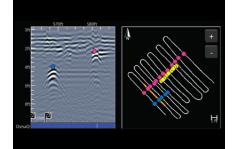
### Visualize your entire survey in MapView

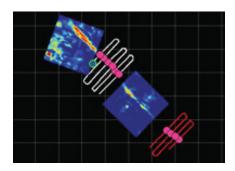
- See your survey path, depth slices, field interpretations, flags and lines
- Toggle layers on and off to focus on the elements of interest

### Export geo-referenced data



Spreadsheet (.CSV) file with flags and interpretations







KMZ output of lines, grid locations, interpretations, and screenshots

Weight: 3.6 kg (7.9 lbs)

Charger: 110 - 240V

# LMX<sup>®</sup> Family Hardware Specifications

# Weight & Dimensions Size: 100 x 70 x 115 cm (39.4 x 27.6 x 45.3 in) Weight: 22 kg (48 lbs) Display Unit size: 21 cm (8 in) diagonal

Power

12 Volt Sealed Lead Acid Gel Cell **Battery Capacity:** 9.0 Ah

Battery Life: 4 – 6 hours

Environmental & Temperature

Ruggedized, environmentally sealed unit and connections

IP65 Operating temperature range: -104 to 122°F (-40 to 50°C)

### **Regulatory Specifications**

Meets FCC 15.509, IC RSS-220 and ETSI EN-302066

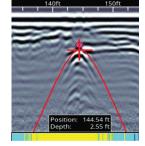
# LMX100 and LMX200 Features

# Rapidly locate metallic and non-metallic utilities

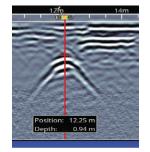
### Enhance your productivity

No complex settings - Just press Start and push the cart

### **Easy Depth Calibration**

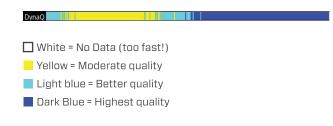


### Pinpoint Depth & Location



Use hyperbola-fitting to ensure accurate depth measurements and backup over the target to display its location and depth

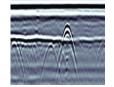
Dynamic Stacking (DynaQ<sup>®</sup>)

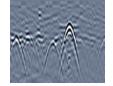


Better data quality with DynaQ - automatically adjusts stacking (averaging) based on your survey speed

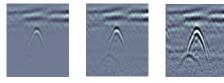
### Increase your target confidence in the field with image optimization

### **Preset Filters**



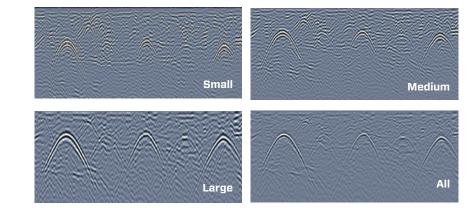


### Adjustable Gain



Optimize visibility of your targets with preset filters & gain

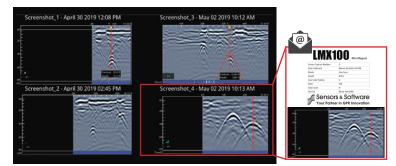
### Dynamic Target Enhancement (DynaT™)



Enhance small, medium & large targets

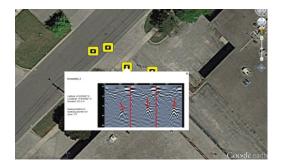
### Get faster deliverables

### In-field Screenshot Gallery & Wi-Fi mini-reports



Manage & review your screenshots and email them in a Wi-Fi mini-report from the field to share key collection information and images

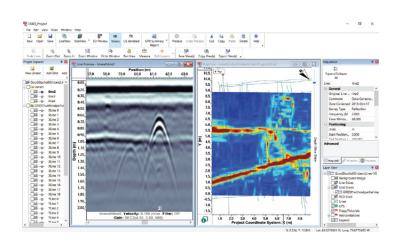
### Geo-tagged information for reports & archiving



All screenshots are geo-tagged and exported in a KMZ file that is easily displayed in Google Earth™

# LMX200 Enhanced Upgrade

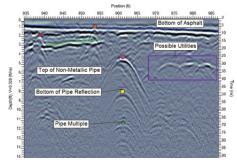
- Project organization (up to 9 projects)
- Data export of GPR lines, grids and screenshots
- EKKO\_Project™ PC software for analysis and reporting



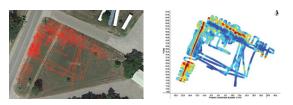
### EKKO\_Project

- Save GPR lines, grids, photos and other files as a single project (.GPZ) file
- Automatically create GPR summary reports (PDF)

# **Comparison Table**



#### Interpretations on GPR lines



Depth slices from GPR Lines

### **Optional Utility Suite**

• Includes LineView, SliceView and Interpretation modules

Feature	LMX100™	LMX200™	LMX200™ Enhanced
Real-time Locate & Mark	✓	✓	<ul> <li>✓</li> </ul>
Grid Scan Mode		<ul> <li>✓</li> </ul>	✓
In-field depth slicing		<ul> <li>✓</li> </ul>	<ul> <li>✓</li> </ul>
External GPS option		<ul> <li>✓</li> </ul>	✓
GPR Data export and EKKO_Project GPR Analysis, Processing and Reporting Software			✓
File Management	Screenshots	Lines, Grids & Screenshots	9 Projects containing Lines, Grids & Screenshots

### Useful resources to make the most of your LMX:

- Webinars, Training Videos and other Free Online Resources (Available on www.sensoft.ca)
- Contact us to learn more about our training offerings



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p. +49 (2624) 915 9353

www.sensoft.ca

# LMX<sup>®</sup> LOCATE & MARK<sup>™</sup>

GROUND PENETRATING RADAR TO DETECT BOTH SHALLOW AND DEEP TARGETS SIMULTANEOUSLY

S

F LMN200

0



# LMX100<sup>™</sup>

# The simple, affordable way to locate and mark utilities in the field

Offers the perfect balance of depth penetration and high resolution for accurate locating



# LMX200™

### The premier GPR locating tool in the market today

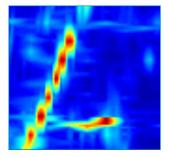
Advanced survey and map functionality in an intuitive and easy to use system. Acquire georeferenced data, create depth slices on-site and easily export information for reporting.



# LMX200<sup>™</sup> FEATURES

### Achieve unprecedented insights and target confidence

#### **3D DEPTH SLICING**



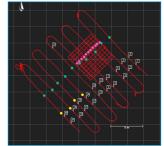
At complex sites, depth slicing reveals the orientation of pipes and cables at different depths and outlines the extent of vaults, foundations and buried tanks.

#### FIELD INTERPRETATIONS



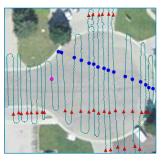
Classify targets in real time with field interpretations. Use the touchscreen to color-code each target as it is located, as per utility marking standards.

#### MAP VIEW ON-SITE



Using the optional external GPS, identified targets and survey path are displayed on the screen in a plan map view.

#### **GEO-REFERENCED OUTPUT**



Display your location and targets in Google Earth™ and other similar geo-referenced platforms. Easily integrate utility locations into CAD drawings and GIS databases.

### DYNAMIC TARGET ENHANCEMENT (DynaT)



# LMX<sup>®</sup> FAMILY FEATURES

### Detect traditionally non-locatable subsurface features

Non-metallic pipes, including PVC and asbestos cement | Concrete storm and sewer systems Utilities where installed tracer wiring has failed | Underground storage tanks and drainage tiles Septic system components | Non-utility structures such as vaults, foundation walls and concrete pads

### Features of the LMX® include:

### SCREEN CAPTURES



Easily save screen captures of your survey data to an image gallery.

## SPECIFICATIONS

### USB DATA TRANSFER



Data saved on the display can be transfered to a USB memory stick for archiving and analysis. Automatic Google Earth<sup>™</sup> output (KMZ)

Rugged, lightweight cart

Wi-Fi connectivity

Hyperbola velocity calibration

Horizontal scaling

	l.	L. C.
	LMX100™	LMX200™
Data Analysis	Real-time Locate & Mark In-field analysis	Real-time Locate & Mark In-field depth slicing <b>Enhanced</b> : Post-processing analysis using EKKO_Project™
Signal Enhancement	DynaQ stacking, spatial filtering, depth and horizontal zoom	DynaQ stacking, DynaT, spatial filtering, depth and horizontal zoom
Data Storage	8 GB internal >40,000 data images (.jpg)	350 km (>200 miles) of line data in internal memory
Dimensions & Weight	<b>Size</b> : 100 × 70 × 115 cm (39.4 × 27.6 × 45.3 in) <b>Weight</b> : 22kg (48 lbs) <b>Screen Size</b> : 21 cm (8 in) diagonal <b>OPTIONAL:</b> <b>System Transport Case</b> : 81 × 74 × 51 cm (32 × 29 × 20 in) <b>Display Unit Carrying Case (soft)</b> : 34 × 30 × 14 cm (13.5 × 12 × 5 in) <b>Display Unit Carrying Case (hard)</b> : 47 × 36 × 18 cm (18 × 14 × 7 in)	
Power	1.25 A @ 12 V Battery: Sealed Lead Acid Gel Cell Life: 4-6 hrs Capacity: 9 Ah Charger: 110 - 240 V for use all over the world	
Environmental	IP65 Temperature: Sensor: -40°C +50°C Display Unit: -20°C +50°C	
Depth	Always collects data to 8 m (26 ft), user defined viewing depths	

### 

LMX200<sup>™</sup> Enhanced provides access to digital data for advanced processing, analysis and reporting.

LMX200<sup>™</sup> Enhanced option includes:

- Display Unit upgrade package
- EKKO \_Project<sup>™</sup> software

Regulatory Specifications: Meets FCC 15.509, Industry Canada RSS-220, ETSI EN-302066

# EKKO\_Project™

# **GPR Analysis & Reporting Software**



# Provide a start and the start

### Sensors & Software Inc.

+1 905 624 8909 +1 800 267 6013

1040 Stacey Court Mississauga, ON Canada L4W 2X8

### sales@sensoft.ca www.sensoft.ca

Locate & Mark is a trademark of Sensors & Software Inc.

# Data exported from LMX200<sup>™</sup> Enhanced uses the EKKO\_Project<sup>™</sup> PC software for Data Management, Display, Archiving and Reporting.

#### Simple GPR project organization:

Organize GPR lines & grids, add photos and other files, and save everything in a single project file.

#### View GPR data:

View GPR lines and depth slices. Slice through multiple grids simultaneously, and add background images to MapView.

#### **Create Impressive Reports:**

Quickly save data as graphic image files (.jpg, .bmp, .png). Automatically create summary reports with data, photographs and text and export as a PDF.

### Add Additional Functionality with the Utility Suite

#### includes LineView, SliceView and Interpretation modules.

- Modify line views and depth slices
- Process GPR line surveys into depth slices
- Export depth slices into Google Earth™
- Add point, polyline, box and annotation interpretations to GPR lines



# **RADIODETECTION**<sup>®</sup>

# The biggest challenge in the water industry today is leakage, the costs involved and damage to the environment

RD500 plastic water pipe locator solution can help solve this problem





# Under time pressure to find and repair leaking water pipes? The RD500 can help

The RD500 traces plastic water pipes over distances up to 500 feet. It is quick and easy to use. Operators can learn to locate and trace using the RD500 in just a few minutes.

STIC

### Introduction

As more and more of the old metal water supply infrastructure fails and is replaced by plastic pipes when repairing leaks or laying new supplies, it has highlighted the need for specific tools to help with acute problems.

With increasing commercial pressures to maintain water supplies, it is vitally important to be able to locate buried plastic pipes as fast as possible to facilitate swift and timely repairs.

The RD500 is a simple to use solution for water utility engineers to locate and trace plastic pipes.

### How does the RD500 help find plastic pipes?

Conventional Pipe and Cable locators trace electromagnetic signals travelling on metal pipes and cables. Those signals don't travel on plastic. The RD500 however generates acoustic signals, which travel down the plastic pipes as vibrations.

The RD500 locator detects the vibrations: the nearer to the pipe, the louder the vibrations are, and therefore an operator can identify the location of the buried pipe and trace its route.

The RD500 has two main components: a Pulse Transmitter which sets up the vibrations when attached via couplings to the water supply and then a hand-held locator to listen Water pipe locator for the vibrations as they emit along the plastic pipe.

### Locator performance

The RD500 locator is capable of locating a single pipe under grass or soil for distances up to 500 feet at depths of 6 feet.

For familiarity, the techniques used to detect and trace with the RD500 are similar to a traditional Cable and Pipe Avoidance tool.





The receiver is handheld and light with the meter fitted at the top of the 48 inch long instrument



The meter is calibrated 0-100 to indicate a peak response to the Pulse Transmitter signal

Meter indicates battery state at each switch (ON)





Locator is supplied with a 5.5 inch in earth spike for soft surfaces and a around plate for paving. asphalt or concrete



Rotary ON/OFF and sensitivity control

# Pulse Transmitters

There are two different types of Pulse Transmitters available:

### Water pressure powered mechanical Pulse Transmitter

The mechanical Pulse Transmitter is a heavy duty brass casting. The input side is fitted to an open standpipe tap, meter base or hydrant via a damper hose and as it discharges water through the Pulse Transmitter into a heavy duty outlet hose, an oscillator reacts to water flow in the Pulse Transmitter body and applies a distinctive pressure wave to the water in the pipe.

All transmitters need a flow of 1.3 - 2.6 US Gallons per minute and there is a choice of three Pulse Transmitter transmitters to suit different application points:

Application	Water pressure	Color of Pulse Transmitter
Fire Hydrant	High Power	Red
Meter Base	Medium Power	Yellow
Тар	Low Power	Green



160 psi/11 bar is maximum working pressure for the Pulse Transmitter.

There is a simple T-handle adjustment to match the Pulse Transmitter to water pressure and flow.

### **Electronic Pulse Transmitter**

ADIODETECTION

The RD500-Tx is an electronic transmitter that provides a traceable automatic fixed pulse down a plastic water pipe via its custom Pulse Transmitter fitting.

An alternative to the water powered mechanical Pulse Transmitter, the RD500-Tx is ideal for use in low pressure water supplies such as sprinklers, hoses or domestic supplies where push fittings may be part of the infrastructure.

The RD500-Tx is connected the same way as a mechanical Pulse Transmitter and is powered by onboard "D" cell batteries or via a 12V DC car adaptor.

The advantage of using the R500-Tx is that once connected, it requires no manual adjustment of the water pressure to provide a traceable signal thus speeding up location and tracing services.





NOTE: The Electronic Pulse Transmitter is mainly for use on service pipes from properties to the water main. Any ANTI VAC or NON-RETURN VALVE will inhibit the signal and no pulse will be detected by the RD500 or other ground mic...

### Ordering information:

Part number	Description
10/RD500 KIT	RD500 Kit comprising RD500 Plastic Water Pipe Locator, Concrete/Asphalt plate, Headphones, Spike and Carry Case
10/5T037	RD500 Low Power Pulse Transmitter (green)
10/5T035	RD500 Medium Power Pulse Transmitter (yellow)
10/5T036	RD500 High Power Pulse Transmitter (red)
10/RD500-TX	RD500-Tx Electronic Pulse Transmitter, includes Bag, Pulse Transmitter connection unit, 12v DC power adaptor, waste hose and tap damper with hose adaptor kit and Tap
10/RD500-MECHKIT	RD500 Kit comprising RD500 KIT, Low Power Pulse Transmitter, Medium Power Pulse Transmitter, High Power Pulse Transmitter, Accessory Bag, waste hose and tap damper and adaptors and Tap
10/RD500-ELECKIT	RD500 Kit comprising RD500 Plastic Water Pipe Locator Kit, Filter Washers, RD500-Tx Electronic Pulse Transmitter, Bag, Pulse Transmitter connection lead, 12v DC power adaptor, waste hose and tap damper with hose adaptor kit and Tap
10/RD500-PRO	RD500 Pro kit, comprising RD500 Plastic Water Pipe Locator Kit, Filter Washers, RD500-Tx Electronic Pulse Transmitter, Bag, Pulse Transmitter connection lead, 12v DC power adaptor, Low Power Pulse Transmitter, Medium Power Pulse Transmitter, High Power Pulse Transmitter, waste hose and tap damper with hose adaptor kit and Tap

### **Global locations**

#### Radiodetection (USA)

28 Tower Road, Raymond, Maine 04071, USA Toll Free: +1 (877) 247 3797 Tel: +1 (207) 655 8525 rd.sales.us@spx.com

#### Schonstedt Instrument Company (USA)

100 Edmond Road, Kearneysville, WV 25430 USA Toll Free: +1 888 367 7014 Tel: +1 304 724 4722 schonstedt.info@spx.com www.schonstedt.com

#### **Radiodetection (Canada)**

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#### Radiodetection Ltd. (UK)

Western Drive, Bristol, BS14 0AF, UK Tel: +44 (0) 117 976 7776 rd.sales.uk@spx.com

Radiodetection (France) 13 Grande Rue, 76220, Neuf Marché, France Tel: +33 (0) 2 32 89 93 60 rd.sales.fr@spx.com

Radiodetection (Benelux) Industriestraat 11, 7041 GD 's-Heerenberg, Netherlands Tel: +31 (0) 314 66 47 00 rd.sales.nl@spx.com

Radiodetection (Germany)

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Radiodetection (Asia-Pacific)

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**Radiodetection (China)** 

13 Fuqianyi Street, Minghao Building D304, Tianzhu Town, Shunyi District, Beijing 101312, China Tel: +86 (0) 10 8146 3372 rd.service.cn@spx.com

Radiodetection (Australia) Unit H1, 101 Rookwood Road, Yagoona NSW 2199, Australia Tel: +61 (0) 2 9707 3222 rd.sales.au@spx.com

### Visit: www.radiodetection.com Follow us on: 📑 in 💟 🕒

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# **RADIODETECTION**<sup>®</sup>

# The biggest challenge in the water industry today is leakage, the costs involved and damage to the environment

SPX

RD500-Tx electronic pulse transmitter

# RD500-Tx

The RD500-Tx is an electronic pulse transmitter that provides a fast and reliable method to apply a traceable signal to plastic pipes carrying domestic water supplies. This pulsed signal can be located and traced by using a ground microphone to identify the location and path of plastic pipes.

The unit is low cost, quick and easy to use. Operators can learn to locate and trace the RD500-Tx signal in just a few minutes.

Simple to connect to domestic services or irrigation lines via a tap or standpipe.



Easy to find signal. Reliable automatic detectable pulse. No pressure adjustment required.



Simple to connect without disrupting live services.

### Description

The RD500-Tx consists of an electronic pulse transmitter, a supply kit containing the necessary connectors, hoses and power supply.

The RD500-Tx differs from a conventional mechanical Pulse Transmitter by providing the required tracing pulse electronically and once connected it requires no manual adjustment of the water pressure to provide a traceable signal.

RADIODETECTION

### **Features**

- Complete kit with all adaptors and hoses required to connect to BIP tap or standpipes.
- Simple to attach and use, little training required.
- Easy to find signal:

Reliable automatic distinct pulse applied to the water service provides easy recognition on distances up to 150 feet, amongst other distracting sounds.

- To be used with RD500 Plastic Pipe Locator or other acoustic listening devices.
- Simple controls, no adjustment of water flow required unlike mechanical water driven pulse transmitters.
- Lightweight and floor standing.
- All connectors and hoses required for connection to 4 bar or less domestic water supplies.
- Robust IP65 can be stored and used in all weather conditions.
- Powered by Battery or 12V DC auxiliary car supply.

NOTE: The RD500-Tx Electronic Pulse Transmitter is mainly for use on service pipes such as those from properties to the water main e.g. local clean water potable connections, sprinkler and irrigation systems.



Part number	Description
10/RD500-TX	RD500-Tx Electronic Pulse Transmitter, includes Bag, Pulse Transmitter connection unit, 12V DC power adaptor, waste hose and tap damper with hose adaptor kit and Tap

# **RADIODETECTION**° **20**

### Visit www.radiodetection.com

### **Global locations**

### **Radiodetection (USA)**

28 Tower Road, Raymond, Maine 04071, USA Toll Free: +1 (877) 247 3797 Tel: +1 (207) 655 8525 rd.sales.us@spx.com

### Schonstedt Instrument Company (USA)

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