SPX®

PRECISION LOCATORS

RD7000™+

UTILITY CABLE, PIPE AND RF MARKER LOCATOR RANGE



Radiodetection®



RD7000+ – delivering fast, accurate, reliable and repeatable locate information for all utilities

Locating specific pipes, cables and markers in large underground networks is becoming increasingly complex. Ground distortion effects, caused by differing soil types and proximity to other conductors, make the operator's job more difficult and time-consuming. The most important requirements for a locator under these circumstances are ease of use, accuracy and reliability. Radiodetection's RD7000+ addresses these needs with several groundbreaking features that deliver accurate, reliable and repeatable measurements.

The RD7000+ is a complete range of locators designed to meet specific industry needs. RD7000+ can locate and automatically estimate depth of pipes, cables and most commonly used RF markers, allowing for faster and more accurate surveys, even in areas of high level of electrical interference.

USABILITY

The RD7000+ is ergonomically designed to deliver a superior performing locator that provides the user with a light weight, energy efficient and exceptionally well balanced tool that is comfortable for extended periods of use. Despite its weight and form, the RD7000+ retains the environmental durability associated with an IP54 rating, meaning you can operate it in almost any environment.

The locator and transmitter both feature large, high contrast, backlit LCD screens that provide the user with clear information in any light conditions. The intuitive and responsive user interface has easily identifiable icons that are consistent across the locator and transmitter range, ensuring straightforward operation.



CENTROS™

RD7000+ units are Centros enabled. Centros is a measurement engine based on more than 30 years of continuous development, combining new and innovative algorithms with established software on a high-performance processor core.

Centros improves location accuracy and repeatability and delivers timely responsiveness in the field.



Centros™ Enabled



MARKER LOCATOR

Marker models detect all commonly used markers with automatic depth.

DYNAMIC OVERLOAD PROTECTION

Automatically filters out interference, allowing use in electrically noisy environments.

TRUDEPTH™

Indicates depth when the locator is oriented correctly above the target pipe, cable or marker for the most accurate reading.

EXTENDED WARRANTY

Warranty can be extended to a total of 3 years by registering the RD7000+ products. Registration is free and provides access to software upgrades and other online features.



Additional features:

- CPS (DL and DLM models), Power and Radio passive location modes
- 50Hz to 200kHz frequency range
- Peak mode
- Null mode (PL and TL models)
- Real sound
- TruDepth
- Current measurement
- Strike*Alert*™
- SurveyCERT™ (marker models)
- Data logging and CALSafe™ (PLM and TLM models)
- Depth measurement in power locate mode (PL models)
- Fault Find (PL, PLM, TL and TLM models)
- Autogain with manual control
- Selectable 50/60Hz
- Selectable metric/imperial
- Selectable language
- Selectable battery type
- Selectable frequency and function set
- Selectable antennae modes
- Settings saved on power down
- USB connectivity for software upgrades and data logging retrieval (marker models)
- Bluetooth® connectivity to external compatible devices (marker models)
- Compatible with RD8000™ accessories

COMPASS

Allows the operator to quickly and easily follow the target line by visually indicating the relative orientation of the target cable and the locator. By indicating the alignment of the target cable with the locator, Compass helps to improve accuracy when measuring depth.

DYNAMIC OVERLOAD PROTECTION

Extends the RD7000+'s locate capability into areas where other products fail by automatically filtering out large and unwanted signals – aiding accurate location of the target pipe, cable and marker even in electrically noisy conditions, for example near High Voltage overhead cables.



PEAK/NULL MODE

A tool to identify the effects of field distortion due to ground conditions or nearby utilities. Simultaneous display of Peak bargraph response and proportional Null arrows allow a quick assessment of locate conditions.

MARKER LOCATOR

RD7000+ marker locators detect all commonly used RF utilities markers. TruDepth automatic depth estimation, without the need of two-steps measurements, allows for faster and more accurate surveys. Combined mode allows scanning for pipes, cables and markers all at the same time.

DATA LOGGING

On board memory (PLM and TLM models only) allows over a year's worth of locate history to be stored at one-second intervals. Data can be backed-up to a PC at any time, giving virtually unlimited record keeping for the life of the product. Retrieved data can be analyzed to aid in ensuring compliance and identifying training requirements.

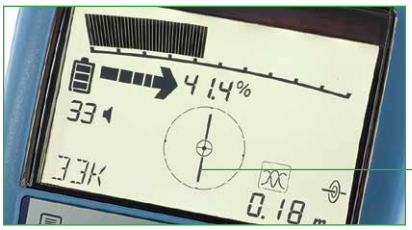
EXTENDED WARRANTY

Radiodetection offers a free upgrade to a 3 year extended warranty on RD7000+ locators and the Tx range of transmitters through registration within 3 months of purchase. Registration also entitles users to free product software and feature upgrades using Centros Manager (non marker models) or RD Manager (marker models) PC software.

REMOTE CALIBRATION

Using the supporting Windows® compatible software, locators can be checked for correct calibration and operation over the internet, without the need to return the RD7000+ to a service center. Operators can then print, email or save a calibration certificate, or book a service should any issue be detected.

Intuitive on-screen menus make the RD7000+ easy to set up and provide easy access to advanced features



Compass orientation display

High contrast LCD with auto-backlight

Splash-proof keypad

Accessory connection

Headphone connection



Powered by 2 x NiMH or alkaline LR20 (D-Cell) batteries, or optional rechargeable battery pack



IP54 environmental protection

Ergonomic robust ABS case

High visibility reflective safety arrows

Marker Models

SurveyCERT commands



Marker antenna loop

High contrast LCD with auto-backlight

Splash-proof keypad



Powered by 8 x NiMH or alkaline LR20 (D-Cell) batteries, or optional rechargeable battery pack

Ergonomic robust ABS case

Base tray for accessories



PEAK/NULL MODE

Enables swift identification of magnetic field distortion due to ground effects or nearby utilities.

SONDE DETECTION

Locate non-conductive pipes at depths of up to 50' (15m).



COMBINED MODE

For rapid utility detection RD7000+ marker locators enable operators to scan for pipes, cables and RF markers at the same time.



STRIKEALERT

Alerts the operator to the presence of shallow power cables.

RD7000+ family

SL/SLM – CONSTRUCTION INDUSTRY

A broad range of standard active frequencies and rugged construction make the SL a reliable and versatile locator. The SLM model adds the ability to locate RF markers and document surveys using SurveyCERT. The entry-level product from Radiodetection is aimed at operators who want an accurate locator that is simple to operate.

The SL models have Compass as standard, and four active and two passive frequencies that cover the majority of locating tasks. The user can quickly and accurately locate the cable or pipe using Peak antennae mode providing accurate depth and current measurement. SLM users can use the combined mode to quickly scan for cable, pipes or markers at the same time.



In addition to Peak mode, combined Peak and Null mode displays both peak response and null response using proportional arrows. This single screen view allows swift identification of distorted signals due to ground conditions or nearby utilities.

With a light weight locator, low power consumption and a durable case with high contrast display, the operator can use the SL all day in all weather and light conditions, while the Dynamic Overload Protection feature aids reliable location in electrically noisy areas.

DL/DLM – WATER AND PIPELINE INDUSTRY

Specifically designed for the water industry, and supported by the wide range of Radiodetection pipe location accessories.

The DL and DLM locators are designed to detect not only active and passive frequencies but also four different sonde signals. This makes the DL range ideal not only for standard pipe, cable and markers (DLM model) location but also for locating deep, underground dirty water pipes and drains where the pipe material does not allow the use of standard locating technology but where sondes can be deployed. The DL and DLM are also capable of locating Cathodic Protection System (CPS) signals applied to pipelines, further extending its versatility.

Four different sonde frequencies allow the DL/DLM to locate pipes made from a wide variety of materials including: cast iron, plastic (PE), clay, fiber, concrete and brick. DLM models allow users to document surveys using SurveyCERT.

The DL range is the ideal partner for the Radiodetection and Pearpoint ranges of inspection equipment. For details of available sondes and accessories see www.radiodetection.com.

Featuring Compass and Dynamic Overload Protection as standard, DL and DLM aid pipe, cable and markers (DLM only) location even in electrically noisy environments.

PL/PLM – POWER INDUSTRY

The PL range identifies the target cable reliably, even in areas of large-scale, trunked cable deployment of complex electrical networks.

One of the biggest challenges to operators working in the power industry is locating cables, pipes and markers when operating near high voltage environments, such as substations and conduits where the presence of large signals overpower most locators.

The PL range is designed for use in areas where excessive magnetic fields, generated by high voltage equipment and cables, can prevent accurate locating. Dynamic Overload Protection reduces this effect, allowing uncompromised locator accuracy.

PL models have both Peak and Null modes and also a combined Peak/Null mode which allows the identification of signal/ground distortion effects by displaying both Peak and Null response simultaneously.



The PLM model adds the ability to locate and estimate the depth of power and other utility markers. In addition, the internal data logging system allows for usage to be analyzed to aid ensuring compliance and identify training requirements.

In addition PL locators can indicate depth in Power mode. This is particularly useful when direct connection of a transmitter to a power cable may be hazardous or impractical. The Compass feature aids correct alignment with the target cable, maximizing depth measurement accuracy.

The 8kHz Fault Find function is a technique that locates a cable sheath fault using an A-frame attached to the Locator. On-screen arrows help show the fault's direction and help the operator locate the fault accurately to within 4" (10cm).

TL/TLM – TELECOM INDUSTRY

Large bundled pairs of cables require specialized location equipment to find a selected signal.

As the Telecommunication utilities continue to deploy highly insulated copper or fiber cables, tracing bundled cables becomes harder. The TL range features additional high locate frequencies capable of pinpointing high impedance cables to help address this problem. The TLM models allow users to locate telecom utility markers, and the internal data logging system allows for usage to be analyzed to aid ensuring compliance and identify training requirements.

Most domestic telecom cables have no earth but are sheathed; using high frequencies allows tracing without needing to ground connections. Once the correct pipe or cable is located, the operator can accurately locate any cable sheath faults to within 4" (10cm) meter using 8kHz Fault Find mode with a Radiodetection A-Frame.

TL models have both Peak and Null modes and also a combined Peak/Null mode which allows the identification of signal/ground distortion effects by displaying both Peak and Null response simultaneously.

Featuring Compass and Dynamic Overload Protection as standard the TL range aids cable, pipe and marker (TLM only) location even in electrically noisy environments, while the addition of three sonde frequencies adds more capability and flexibility.



DEPTH IN POWER MODE

Allows depth measurements without using a transmitter.

SURVEYCERT

Share locate data with PC or PDA applications for reporting, audit and analysis.

MULTIPLE POWER OPTIONS

RD7000+ locators can be powered by Li-Ion rechargeable packs (standard marker models), NiMH or alkaline batteries.

RANGE OF TRANSMITTERS

Three models, capable of delivering 1, 5 or 10 Watts (true output) with multiple features for a broad range of applications.



HIGH VOLTAGE OUTPUT

90V output option to increase signal definition on high resistance lines.



HIGH POWER OUTPUT

For locating deep and long distance cables and pipes.

Radiodetection Transmitters

Based on a fully digital platform, the family of Radiodetection transmitters has been designed to support the range of Radiodetection RD7000+ and RD8000 cable, pipe and RF marker locators.

The Tx-1 is a low power transmitter. The Tx-5 has a higher power capability and the Tx-10 has the highest power capability. The Tx-5 and Tx-10 feature Fault Find as standard.

All models feature constant current across their entire bandwidth in either direct connect, clamp or inductive mode. The transmitters are light-weight (6lb / 2.9kg), well-balanced and IP54 rated to cope with demanding environmental conditions. Each model has a removable accessory tray and a weatherproof battery compartment. A large, high contrast, backlit LCD screen provides the user with clear information.

90V output capability: All transmitters offer both 30V and 90V output options, resulting in higher signal current delivered on high impedance target lines than typical transmitters that only offer a 50V output. Higher signal levels are more locatable, and travel over longer distances.

SideStep*auto*™: allows the transmitter to calculate the optimum frequency based on ground impedance. The transmitter uses this information to optimize the active frequency. SideStep*auto* helps to improve locate accuracy and extends battery life.

The transmitter range features Direct Connect and induction frequencies compatible with locators across the RD8000 range, and can be easily customized to match your locator using the 'model' menu.

A multimeter function enables quick measurements of output voltage, line voltage, current, impedance and power.

The transmitters are powered either by 8 standard D-cell batteries (alkaline or rechargeable NiMH) or by the Lithium-Ion rechargeable battery pack (available separately). Alternatively, the Tx range can be powered from a 12V vehicle source using a Radiodetection approved isolation transformer.

Alkaline battery life can be extended by enabling **ECO** mode which warns the operator and gradually reduces the power output in low battery conditions (Tx-5 and Tx-10 models only).



Transmitter features

- Three power versions: 1 Watt, 5 Watt and 10 Watt
- 8kHz Fault Find – locates faults from short circuit up to 2MΩ
- Current Direction Fault Find – for long distance fault finding
- 5 Current Direction (CD) paired low frequencies (requires RD8000)
- Current delivered at 30V, or 90V high voltage mode for high impedance operation
- 256Hz to 200kHz active frequency range
- Selectable modes support specific RD7000+ and RD8000 locator model frequency ranges
- 8 inductive frequencies
- SideStep*auto*
- 250V Transient overvoltage protection
- Multimeter function
- 8 D-cell battery cassette/rechargeable Lithium-ion battery pack option
- Accessory tray (for ground stake, direct connect leads and earth reel)
- Plug and play accessories
- External 12V DC operation (using Radiodetection isolation transformer)
- Click-touch splash-proof sealed keypad
- High contrast LCD



MODEL NO.	TX-1	TX-5	TX-10
Power (Watt)	1	5	10
ECO mode		✔	✔
CD			✔
8KFF		✔	✔
Induction frequencies	8	8	8
Induction field strength	0.7	0.85	1
Direct connect frequencies	15	15	15
Accessory storage base	✔	✔	✔
NiMH & Alkaline standard batteries	✔	✔	✔
External 12V supply	✔	✔	✔
Multimeter	✔	✔	✔
Transient overvoltage protection	✔	✔	✔
LCD display	✔	✔	✔

8K FAULT FINDING

Locate cable sheath faults to within 4" (10cm) using Radiodetection's A-Frame accessory.



REPEATABLE PERFORMANCE

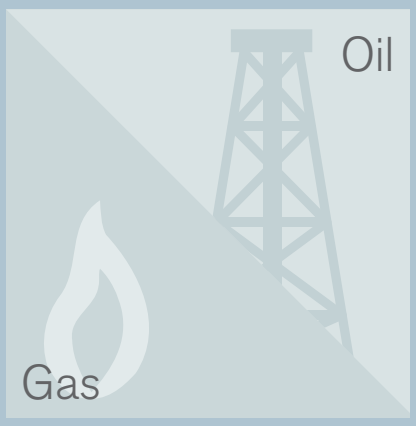
All models deliver a constant current from 256Hz to 200kHz, meeting the highest demands of reliability and performance.

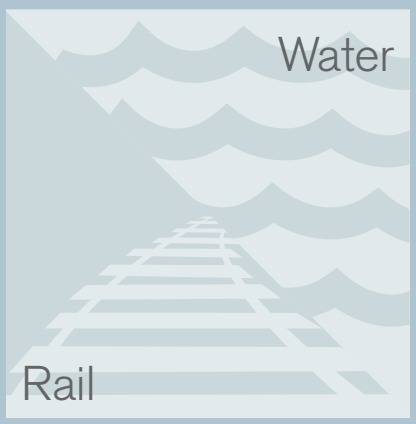


OPTIONAL TRANSMITTER RECHARGEABLE BATTERY PACK KIT

A convenient and cost effective alternative to alkaline batteries.

An RD7000+ to address any utility...







RD7000+ MODEL:	SL	DL	PL	TL
Passive Frequencies:				
Power/Radio	✔	✔	✔	✔
CPS		✔		
Active Frequencies:				
512Hz		✔	✔	✔
640Hz		✔	✔	✔
8kHz	✔	✔	✔	✔
33kHz	✔	✔	✔	✔
65kHz	✔	✔	✔	✔
83kHz	✔			
131kHz				✔
200kHz				✔
Sonde Frequencies:				
512Hz		✔		✔
640Hz		✔		✔
8kHz		✔		
33kHz		✔	✔	✔
Features:				
Compass	✔	✔	✔	✔
Dynamic Overload Protection	✔	✔	✔	✔
TruDepth	✔	✔	✔	✔
Depth in power mode			✔	
8kHz Fault Find			✔	✔
Peak mode	✔	✔	✔	✔
Null mode			✔	✔
Peak / Null mode	✔	✔	✔	✔
Strike*Alert*	✔	✔	✔	✔
Remote Calibration	✔	✔	✔	✔
Marker Models:	SLM	DLM	PLM	TLM
Marker mode	✔	✔	✔	✔
Combined mode	✔	✔	✔	✔
SurveyCERT	✔	✔	✔	✔
Data Logging			✔	✔
CALSafe (Service reminder)			✔	✔

Accessories

Radiodetection's comprehensive range of accessories adds extra functionality and extends the scope of the precision locate cable and pipe locator systems.

Most accessories are also compatible with older locator and transmitter models such as the RD7000 range of locators or the RD4000 'T' range of transmitters.

LOCATOR ACCESSORIES

The precision locator accessory range offers a wide choice of add-ons including fault find 'A-frames,' current measurement clamps and submersible antennas, as well as offering the convenience of alternative power source options and on-line calibration validation.

TRANSMITTER ACCESSORIES

The range of Tx transmitter accessories is designed to improve the coupling of transmitter signals onto utilities as well as adding extra functionalities, for example the ability to locate 3 phase LV cable core-to-core short-circuits. A wide choice of alternative power supply options are also available.

ACCESSORIES FOR TRACING NON-CONDUCTIVE UTILITIES

Radiodetection offers a range of sondes and flexible rods designed to enable operators to trace non-conductive (e.g. plastic or ceramic) utilities, for example the flexitrace connected to a Tx allows users to easily trace a pipe or pinpoint a specific location.

STORAGE AND TRANSPORT ACCESSORIES

Radiodetection offers a range of soft and hard cases designed to offer a practical and durable transport solution for locators, transmitter and accessories.

TECHNICAL SPECIFICATIONS FOR LOCATOR AND TRANSMITTER

Features are model dependant	
Sensitivity	5µA at 1 meter (33kHz)
Dynamic range	140dB rms/√Hz
Selectivity	120dB/Hz
Maximum depth[1]	Line: 20' / 6m Sonde: 50' / 15m RF Markers: Near Surface: 2' / 60cm Ball Marker: 4.9' / 1.5m Mid-Range: 5.9' / 1.8m Full Range: 7.9' / 2.4m
Depth accuracy[2]	Line: ± 5% tolerance 4" / 0.1m to 10' / 3m Sonde: ± 5% tolerance 4" / 0.1m to 23' / 7m RF Markers: ± 15% ± 2" / 5cm up to the maximum depth
Locate accuracy	± 5% of depth
Fault-Finding (FF)	Diagnose cable sheath faults from short circuit to 2MΩ using the A-frame
Max Transmitter Power output	1W (Tx-1), 5W (Tx-5 and Tx-5B), 10W (Tx-10 and Tx-10B)
Dynamic overload protection	30dB (automatic)
Batteries	Cable and Pipe Locator: 2 x D-cells (LR20) or optional Li-Ion battery pack Marker locator: Li-Ion battery pack or 3 x D-cells (LR20) Transmitter: 8 x D-cells (LR20) or optional Li-Ion battery pack
Battery Life (continuous usage)[3]	Cable and Pipe Locator: Alkaline up to 13 hours Marker Locator: Li-Ion or Alkaline up to 25 hours Transmitter: Alkaline up to 23 hours
Warranty	12 Month standard, 36 Months upon registration
Compliance	FCC, RSS 310 RoHS, WEEE, CE, Bluetooth
Weight	Cable and Pipe Locator: 4.2lbs / 1.9kg (including alkaline batteries) Marker Locator: 4.6lbs / 2.1kg (including Li-Ion battery pack) Transmitter: 6.2lbs / 2.8kg (including alkaline batteries) 9.3lbs / 4.2kg (including accessories)
Dimension (H x D x W)	Cable and Pipe Locator: 25.5" x 11.3" x 4.9" / 648 x 286 x 125mm Marker Locator: 25.5" x 11.3" x 7" / 648 x 286 x 177mm Transmitter: 14" x 8.9" x 8.1" / 356 x 227 x 207mm
Construction	Injection Molded ABS Plastic
Ingress Protection	IP54
Operating Temperature	14 to 122°F / -10 to 50°C

[1] In Good Conditions.
[2] RD7000+ will locate to greater depths but accuracy may be reduced.
[3] At 70°F / 21°C with good quality batteries, transmitter output set to 1W.







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RD7000+

UTILITY CABLE, PIPE AND RF MARKER LOCATOR RANGE

Global locations

USA

SPX Global Headquarters
13515 Ballantyne Corporate Place
Charlotte, NC 28277, USA
Tel: +1 704 752 4400
www.spx.com

Radiodetection
28 Tower Road, Raymond, Maine 04071, USA
Tel: +1 (207) 655 8525
Toll Free: +1 (877) 247 3797
Fax: +1 (207) 655 8535
rd.sales.us@spx.com
www.radiodetection.com

Pearpoint
39-740 Garand Lane, Unit B
Palm Desert, CA 92211, USA
Tel: +1 800 688 8094
Tel: +1 760 343 7350
Fax: +1 760 343 7351
pearpoint.sales.us@spx.com
www.radiodetection.com

Radiodetection (Canada)
344 Edgeley Boulevard, Unit 34
Concord, Ontario L4K 4B7, Canada
Tel: +1 (905) 660 9995
Toll Free: +1 (800) 665 7953
Fax: +1 (905) 660 9579
rd.sales.ca@spx.com
www.radiodetection.com

EUROPE

Radiodetection Ltd. (UK)
Western Drive, Bristol BS14 0AF, UK
Tel: +44 (0) 117 976 7776
Fax: +44 (0) 117 976 7775
rd.sales.uk@spx.com
www.radiodetection.com

Radiodetection (France)
13 Grande Rue, 76220, Neuf Marché, France
Tel: +33 (0) 2 32 89 93 60
Fax: +33 (0) 2 35 90 95 58
rd.sales.fr@spx.com
http://fr.radiodetection.com

Radiodetection (Benelux)
Industriestraat 11
7041 GD 's-Heerenberg, Netherlands
Tel: +31 (0) 314 66 47 00
Fax: +31 (0) 314 66 41 30
rd.sales.nl@spx.com
http://nl.radiodetection.com

Radiodetection (Germany)
Groendahlscher Weg 118
46446 Emmerich am Rhein, Germany
Tel: +49 (0) 28 51 92 37 20
Fax: +49 (0) 28 51 92 37 520
rd.sales.de@spx.com
http://de.radiodetection.com

ASIA-PACIFIC

Radiodetection (Asia-Pacific)
Room 708, CC Wu Building
302-308 Hennessy Road, Wan Chai
Hong Kong SAR, China
Tel: +852 2110 8160
Fax: +852 2110 9681
rd.sales.asiapacific@spx.com
www.radiodetection.com

Radiodetection (China)
Room 5-10, Workshop 4
No. 10 Zhenggezhuang Village
Beiqijia Town, Changping District
Beijing 102209, China
Tel: +86 (0) 10 8178 5652
Fax: +86 (0) 10 8178 5662
rd.service.cn@spx.com
http://cn.radiodetection.com

Radiodetection (Australia)
Unit H1, 101 Rookwood Road,
Yagoona NSW 2199, Australia
Tel: +61 (0) 2 9707 3222
Fax: +61 (0) 2 9707 3788
rd.sales.au@spx.com
www.radiodetection.com

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90/RD7000+/ENG/07

Cable Locators & Survey