

RD7100[™] Locator Specification



> Radiodetection[®]

RD7100 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
	Mini USB 2.0 compliant data cable

2. Performance

2.1 Sensitivity:	6E-15 Tesla 5μA at 1 meter (33kHz)			
2.2 Dynamic range:	40dB rms/√Hz			
2.3 Selectivity:	120dB/Hz			
2.4 Depth measurement precision¹:	± 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 ² :	Metric: Cable / Pipe: 30m Sonde: 19.5m Imperial: Cable / Pipe: 98' Sonde: 64'			

3. Locate Functions

3.1 Active Locate Modes:	Up to four, model dependent: Peak Peak+™ (choice of combined Peak & Guidance or Peak & Null) Guidance 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 Active locate frequencies: Up to seven:

RD7100 MODEL	SL	DL	DLG	PL	PLG	TL	TLG
Active frequencies	4	5	5	5	5	7	7
512Hz		•	•	•	•	•	•
640Hz		•	•	•	•	•	•
8kHz (8192Hz)	•	•	•	•	•	•	•
33kHz (32768Hz)	•	•	•	•	•	•	•
65kHz (65536Hz)	•	•	•	•	•	•	•
83kHz (83077Hz)	•						
131kHz (131072Hz)						•	•
200kHz (200000Hz)						•	•

3.4 Sonde Frequencies:	Up to four:	Up to four:									
	RD7100 MODEL	SL	DL	DLG	PL	PLG	TL	TLG			
	512Hz		•	•			•	•			
	640Hz		•	•			•	•			
	8kHz (8192Hz)		•	•							
			•	•	•	•	•	•			
3.5 Fault Find:	33kHz (32768Hz) Locate insulation sheath faults on pipes and cables to 10cm / 4" accuracy using the accessory										
3.3 Fault Find.	A-Frame and a compa			cables to 10	CIII / 4 ac	curacy using	ine access	ory			
	RD7100 MODEL	SL	DL	DLG	PL	PLG	TL	TLG			
	8kHz Fault Find				•	•	•	•			
3.6 Passive Locate Modes:	RD7100 MODEL	SL	DL	DLG	PL	PLG	TL	TLG			
	Power	•	•	•	•	•	•	•			
	Radio	•	•	•	•	•	•	•			
	CPS (Cathodic										
	Protection System)										
3.7 Power Filters [™] function:	Switch out of Radiode frequencies. (RD7100)				locate on a	ny of 5 indiv	idual mains	harmonic			
	HARMONIC		50 Hz regio	ons		60 Hz regi	ons				
	Primary	Primary				60 Hz					
	3rd		150 Hz		180 Hz						
	5th		250 Hz		300 Hz						
	7th		350 Hz			420 Hz					
	9th		450 Hz			540 Hz					
3.8 Information displayed:	 Signal strength - moving bar graph and numeric value Mode indication (Peak, Null, Guidance, Peak+ with option of Guidance arrows or Null arrows) Line or Sonde locate type Proportional left/right indication Compass: full 360° line direction indicator Accessories in use indication Accessory specific custom screen Simultaneous depth and current readout (Line location) Depth readout (Sonde location) Gain level (in dB) Frequency selected Battery condition Speaker volume Operating frequency GPS satellites in view (where fitted) GPS status (where fitted) Configuration menu and submenus Software version Last calibration date Fault Find mode indicator (model dependent) StrikeAlert" warning Overload warning 						ows)				
3.9 Audio output tones:	Power / Radio mode Real Sound™ derived Peak / Peak+ modes Synthesized audio tor Guidance mode: Continuous tone wher Null mode: Synthesized audio tor of target StrikeAlert audio wa	from detects: ne proportion n locator is	onal to signa	I strength f target, inte	ermittent to		-				

Audio feedback for menu navigation

3.10 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

4. Locate Function Enhancements

4.1 Strike <i>Alert</i> :	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 Dynamic Overload Protection™:	40dB, automatic Automatically manages the system gain to compensate for strong signals e.g. from mains power o substations, to enable accurate locating
4.3 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
4.4 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 (RD7100PL, PLG, TL, TLG models only) 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 with the exception of Peak Mode 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 Strike <i>Alert</i> :	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 / Off / Reset. SBAS On / Off
5.10 Time / date setting:	Correct or update locator real-time clock using the RD Manager PC software or GNSS signals (GPS/Logging enabled units)

6. Connectivity

6.1 Wired connections:	Mini-USB: Connect to a PC to configure and update locator, and to retrieve usage log and survey measurement data
	3.5mm Stereo jack: Connect wired headphones
	Accessory port: Connect Radiodetection accessories

7. Data capabilities and GNSS ('GPS')

7.1 Usage-logging and GNSS ('GPS'):	RD7100 MODEL	SL	DL	DLG	PL	PLG	TL	TL
	Usage-logging			•		•		•
	On-board GNSS ('GPS')			•		•		•
7.2 Usage-logging memory:	4 GB							
7.3 Usage-logging capacity:	Over 500 days, measure	d at 8 hou	rs use per d	ау				
7.4 Usage-logging capture rate:	1/second							
7.5 Usage parameters logged:	Serial number Log reference and id Operating mode Locate frequency Sonde/line Signal strength Gain setting Depth Current Accessory in use Antenna mode Arrows readout Compass angle Overload status Dynamic Overload Protes	ction	Keys presses Audio status Volume Menu in use Battery statu User warnin StrikeAlert s Fault find ar SideStep statu Language Depth units Power settir Compass se Logging Ui Date and tin	s us gs status status row atus atus ng		With a GN: Latitude Longitude Altitude GNSS date Horizontal E Geoid DGPS Time Geoid Units GNSS fix Number of s Altitude unit	and time Dilution and ID satellites	

8. Power options

2 × D-Cell (MN1300	2 × D-Cell (MN1300 / LR20) alkaline batteries (standard)					
	Custom Lithium-lon (Li-lon) battery pack 2 × D-Cell (MN1300 / LR20) Nickel Metal Hydride (NiMH) batteries					
Li-lon pack:	35 hours					
2 × Alkaline D-Cells	13 hours					
Lithium-lon pack:	Automatic sensing					
NiMH / Alkaline:	Software switchable					
Mains charger:	100-250 Volts AC, 50/60 Hz					
Automotive charger:	12-24V DC					
3 hours to 80% from empty with maintenance trickle charging thereafter						
	Custom Lithium-lon (2 × D-Cell (MN1300 Li-lon pack: 2 × Alkaline D-Cells Lithium-lon pack: NiMH / Alkaline: Mains charger: Automotive charger:					

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 water⁵ 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 ⁶ :	Metric: -20 to 50°C Imperial: 14 to 122°F
9.8 Storage temperature:	Metric: -20 to 70°C Imperial: 14 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[™] Supporting PC Software

10.1 Operating System Compatibility:	Microsoft® Windows® XP, 7, 8, 8.1, 32 and 64-bit versions					
10.2 Locator system compatibility:	Radiodetection RD7100 and RD8100 Precision Locators RD7000+ and RD8000 Cable, Pipe and Marker Locators					
10.3 Functions:	 Locator configuration eCert[™] remote calibration certification Factory calibration certificate retrieval Usage-logging data collation and export User account management CALSafe[™] maintenance schedule enforcement Product registration for extended warranty Locator software update Contact Radiodetection Book a service 					
10.4 Data export formats:	.kml for Google® Maps .csv for database and spreadsheet applications .xls / .xlsx for Microsoft® Excel®					
10.5 KML data export options:	Filter usage-logging and survey measurement points on Google® 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:	Annual, or at the beginning / end of a lease period if earlier
11.3 eCert remote calibration:	 Remote calibration certification using an internet connection to Radiodetection Recommended schedule: annual, or at the beginning / end of a lease period
11.4 CALSafe [™] :	 Can be enabled to prevent the locator operating when beyond a defined calibration / maintenance schedule Disabled by default 30-day countdown to calibration due date
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
11.7 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	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:	R&TTE Directive 1999/5/EC						
		Low Voltage Directive: 2006/95/EC						
		EMC Directive: 2004/108/EC						
		Declaration of conformity is available from www.radiodetection.com						
12.3	Environmental:	WEEE compliant						
		ROHS compliant						
12.4	Manufacturing:	ISO 9001:2008						

13. Compatible Accessories

Accessory	Part description	Part number
13.1 Lithium-Ion battery packs	Li-lon rechargeable battery mains kit (Includes mains charger) Li-lon rechargeable battery pack (no charger)	10/RX-MBATPACK-LION-K 10/RX-BATPACK-LION
13.2 Lithium-Ion battery chargers	Li-lon automotive charger Li-lon 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 10/RX-CLAMP-50 10/RX-CLAMP-2 10/RX-CLAMP-100 10/RX-CLAMP-4 10/RX-CLAMP-130 10/RX-CLAMP-5
13.5 Locator signal clamps - For identification and location of utilities	Metric: 50mm Locator Clamp Imperial: 2" Locator Clamp Metric: 100mm Locator Clamp Imperial: 2" Locator Clamp Metric: 130mm Locator Clamp Imperial: 5" Locator Clamp	
13.6 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	High Gain Stethoscope Large Stethoscope Small Stethoscope	10/RX-STETHOSCOPE-HG 10/RX-STETHOSCOPE-L 10/RX-STETHOSCOPE-S

Accessory	Part descriptio	n					Part number
3.7 Sondes Battery powered signal		Diameter		Range			
transmitters for tracing or locating non-conductive utilities		mm	In	m	Ft	Freq (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	61/2	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	11/2	5	161/2	8	10/SONDE-STD-8
						512	10/SONDE-STD-512
	Slim Sonde	22	7/8	3.5	111/2	33k	10/SONDE-SLIM-33
	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:		640 / 512Hz Submersible DD Antenna 8kHz Submersible DD Antenna					10/RX-SUBANTENNA-640 10/RX-SUBANTENNA-8K
13.9 FlexiTrace [™] – Use with a transmitter to trace small diameter pipes		FlexiTrace 50m / 165' FlexiTrace 80m / 260'					10/TRACE50-GB 10/TRACE80-GB
13.10 Flexrods - Fibreglass rod used for	Length	D	iameter				
propelling Radiodetection sondes through pipes to trace the path and locate blockages	m	Ft	m	m In			
	50	160	4.	5	3/16		10/FLEXRODF50-4.5
	80	260	4.	5	3/16	3	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
3.11 A-Frame – Used for locating sheath faults on cables and coating defects on pipelines	A-Frame (include A-Frame Bag	A-Frame (includes A-Frame Lead) A-Frame Bag					10/RX-AFRAME 10/RX-AFRAME-BAG
13.12 Headphones	Recommended for use in noisy environments						10/RX-HEADPHONES
13.13 Warning Triangle	Three sided folding warning sign					10/WARNING-TRIANGLE	
13.14 Calibration Certificates	Locator Calibration Certificate, per unit (request with initial locator order) eCert* 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.

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

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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 RD7100 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 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.

⁴ To provide repeatable measurements, run-time is measured with GPS functions switched to 'off'.