RD8200[™] 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 Tesia		
•	5μA at 1 meter (33kHz)		
	•		
2.2 Dynamic range	140dB rms/√Hz		
2.3 Selectivity	120dB/Hz		
2.4 Depth measurement precision ¹	± 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 ²	Metric: Cable / Pipe: 30m Sonde: 19.5m		
	Imperial: Cable / Pipe: 98' Sonde: 64'		

3. Locate Functions

3.1 Active Locate Modes	Five: Peak Peak+™ (choice of combined Peak & Guidance or Peak & Null) Guidance Broad Peak™ 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™ (CD) Signal Pairs	14 CD Pairs: 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 (INV), 1248/624Hz (INV), Confirm operator is following the target pipe or cable with CD arrows and a compatible transmitter			
3.8 Passive Locate Modes	 Power Radio CPS – cathodic protection system CATV – Cable TV Passive Avoidance – simultaneous locate of power and radio 			
3.9 Power Filters [™] function	Switch out of sensitive Po	ower Mode to locate on any of 5 i	ndividual 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				
3.11 Audio output tones	Volume level: VOL0, VOL1, VOL2, VOL3, Audio LevelPitch: Low and High	VOL4 and VOL5		

Audio feedback for menu navigation

StrikeAlert audio warning

Swing audio warning

Power/Passive Avoidance/Radio modes:

Real Sound™ derived from detected electromagnetic signal

Peak/Peak+ modes and CPS/CATV 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 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™	40dB, automatic Automatically manages the system gain to compensate for strong signals e.g. from mains power of substations, to enable accurate locating			
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 [™] (CD)	 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 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 			
4.7 iLOC™	Metric: Remote transmitter control from up to 450m away³ Imperial: Remote transmitter control from up to 1400¹ away³ Control transmitter frequency, power level and SideStep			
4.8 SideStep [™]	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® 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™ remote transmitter control range³	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 survey measurement data 3.5mm Stereo jack: Connect wired headphones Accessory port: Connect Radiodetection accessories		

7. Data capabilities and GNSS ('GPS')

7.1 On-board GNSS ('GPS') option		I to Survey Measurements ever	y time locate data is saved, and ever
	second on usage-logging data		
	Accurate to 2.5m CEP with SBA	S enhancement available	
	Supports GPS and GLONASS s	atellites constellations	
	SBAS - Augmentation systems	(where available)	
	 WAAS – North America 		
	EGNOS - Europe		
	MSAS – Japan		
	GAGAN – India		
7.2 Link to external GNSS ('GPS')	Over Bluetooth		
			rvey measurements with that device
	GNSS data on the external de	evice	
7.3 External GNSS position read-in		·	ioning from that device and combine
to locator memory	with the locator's survey mea	surement data on board the loc	cator
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 Antenna mode	Sidestep status	Geoid Units GNSS fix
	Arrows readout	Language Depth units	Number of satellites
	Compass angle	Power setting	Altitude units
	CD phase	Compass setting	Time reference
	Overload status	CD reset status	Time reference
	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)
	Date and Time	Latitude Angle (deg)
7.10 Survey measurement export	Bluetooth – 'live,' per measurement	
options	Bluetooth - batch export	
	USB - selectable / batch export	
7.11 Bluetooth survey	PPP	
measurement data protocol options	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) ⁴	Li-lon pack: 2 × Alkaline D-Cells	35 hours	
04 B H		15.104.0	
8.4 Battery chemistry identification	Lithium-Ion pack: NiMH / Alkaline:	Automatic sensing Software switchable	
8.5 Charging options (Li-lon pack)	Mains charger: Automotive charger:	100-250 Volts AC, 50/60 Hz 12-24V DC	
8.6 Charging time (Li-lon 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 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°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[™] Online Supporting PC Software

10.1 Operating System Compatibility	Microsoft® Windows® 10 64-bit					
10.2 Locator system compatibility	Radiodetection RD7200 and RD8200 Precision Locators					
10.3 Functions	 Locator configuration eCert[™] remote calibration certification Factory calibration certificate retrieval Usage-logging data collation and export Survey measurements data collation and export User account management Locator software update 					
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	n and 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 EN 61326-1:2013					
EMC:						
	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					
12.0 Radio	1 00, 10					
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-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	
I3.5 Locator signal clamps – For identification and location of utilities	Metric: 50mm Locator Clamp Imperial: 2" Locator Clamp Metric: 100mm Locator Clamp Imperial: 4" Locator Clamp Metric: 130mm Locator Clamp Imperial: 5" Locator Clamp CD 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	n					Part number
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 CD Stethoscope						10/RX-STETHOSCOPE-HG 10/RX-STETHOSCOPE-L 10/RX-STETHOSCOPE-S 10/RX-CD-STETHOSCOPE
13.7	Sondes Battery powered signal		Diameter		Ra	nge	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 Sma Sonde	l 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	1 1/2	5	161/2	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
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 Diameter						
	propelling Radiodetection sondes through pipes to trace the path and locate blockages	m	Ft	r	mm	In		
		50	160		1.5	3/1	6	10/FLEXRODF50-4.5
		80	260	4	1.5	3/1	6	10/FLEXRODF80-4.5
		50	160	7	7	1/4		10/FLEXRODF50-7
		100	320	7	7	1/4		10/FLEXRODF100-7
		150	485	7	7	1/4		10/FLEXRODF150-7
		60	195	9)	3/8		10/FLEXRODF60-9
		120	390	9)	3/8		10/FLEXRODF120-9
13.11	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	
13.12	I 3.12 Headphones Recommended for use in noisy environments Locator Calibration Certificate, per unit (request with initial locator order) eCert™ Calibration Credit					10/RX-HEADPHONES		
13.13					initial	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 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.
- 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 and Bluetooth functions switched to 'off'.
- 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, LCD performance may slow and measurement precision may reduce.



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)

100 Edmond Road, Kearneysville, WV 25430 USA

Toll Free: +1 888 367 7014 Tel: +1 304 724 4722 schonstedt.info@spx.com

Radiodetection (Canada)

344 Edgeley Boulevard, Unit 34, Concord, Ontario L4K 4B7, Canada

Toll Free: +1 (800) 665 7953 Tel: +1 (905) 660 9995 rd.sales.ca@spx.com

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)

Groendahlscher Weg 118, 46446 Emmerich am Rhein, Germany

Tel: +49 (0) 28 51 92 37 20 rd.sales.de@spx.com

Radiodetection (Asia-Pacific)

Room 708, CC Wu Building, 302-308 Hennessy Road, Wan Chai, Hong Kong SAR, China

Tel: +852 2110 8160 rd.sales.asiapacific@spx.com

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



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