RADIODETECTION ***



RD8200®

Locator Specification

Precision locators









RD8200SG 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 and mapping 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 with lithium-ion battery pack Charger and mains lead Phone holder USB lead User Guide Rechargeable battery instruction sheet	

2. Performance

2.1 Sensitivity	6E-15 Tesla 5μA at 1 meter (33kHz)		
2.2 Dynamic range	140dB rms/VHz		
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	<2.5 seconds		
2.8 Maximum depth readout ²	Metric: Cable / Pipe: 30m Sonde: 19.5m Imperial: Cable / Pipe: 98' Sonde: 64'		

3. GNSS

3.1 Service Support	 GPS: L1C/A, L2C GLONASS: L1OF, L2OF Galileo: E1B/C, E5b 			
3.2 Convergence time RTK	< 10 sec			
3.3 Position accuracy RTK	0.01m + 1ppm CEP			
3.4 Acquisition	Cold starts 24s Aided starts and reacquisition 2s Timings stated are best case and dependent upon atmospheric conditions, baseline length, GNSS antenna, multipath conditions, satellite visibility and geometry			
3.5 SBAS	Augmentation Systems (where available)			
3.6 RTK Correction Service	NTRIP and RTCMv3.X messaging standards			
3.7 GNSS settings	RTK/Reset/Off			
3.8 GNSS Antenna	Integrated, precision tuned helical antenna Built-in low-noise amplifier (LNA)			
3.9 LED Indicator	Solid – RTK fix Flashing – RTK float Off – all other conditions			

4. Locate Functions

4.1 Active Locate Modes	Five: Peak Peak+™ (choice of combined Peak & Guidance or Peak & Null) Guidance Broad Peak Null				
4.2 Gain control	Guidance Mode: Automatic Other modes: Manual gain u				
4.3 Custom locate frequencies	Up to 5 additional frequencies in	n the range 50Hz to 1kHz	at 1Hz resolu	tion	
4.4 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*			
4.5 Sonde Frequencies	4 Frequencies: 512Hz, 640Hz, 8kHz and 33kHz	4 Frequencies: 512Hz, 640Hz, 8kHz and 33kHz			
4.6 Fault Find	8KFF and CDFF Locate insulation sheath faults of and a compatible transmitter	Locate insulation sheath faults on pipes and cables to 10cm / 4" accuracy using the accessory A-Frame			
4.7 Current Direction™ (CD) Signal Pairs	4096/8192Hz, 680/340Hz (INV (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			
4.8 Passive Locate Modes	 Power Radio CPS – cathodic protection system CATV – Cable TV Passive Avoidance – simultaneous locate of power and radio 				
4.9 Power Filters [™] 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	
4.10 Information displayed	 Signal strength – moving bar graph and numeric value Mode indication (Peak, Null, Guidance, Broad Peak, 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 Depth and current readout (Line location) Depth readout (Sonde location) Gain level (in dB) Frequency selected Battery condition Battery condition Battery condition Bluetooth® wireless technology status GPS status Configuration menu and submenus Software version Last calibration date Survey measurement counter Current Direction mode indicator Fault Find mode indicator Transmitter communication status Transmitter standby status StrikeAlert® warning Overload warning Swing warning 				

^{*}Only available on FCC models

4.11 Audio output tones	Volume level:
	VOL0, VOL1, VOL2, VOL3, VOL4 and VOL5
	Audio Level Pitch:
	Low and High
	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
4.12 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 14 Compatible Accessories – for a complete list of locator accessories

5. Locate Function Enhancements

5.1 StrikeAlert	Audio and visual warning when a cable or pipe less than 30cm deep is detected. Operates in Active and			
5.1 StrikeAlert	Passive locating modes			
5.2 Haptic Vibration	Handle vibrates when StrikeAlert, Swing and Overload warnings activated			
5.3 Swing Warning	Audio and visual warning when the user is swinging the locator excessively			
5.4 Dynamic Overload Protection™	 40dB, automatic Automatically manages the system gain to compensate for strong signals e.g. from mains power or substations, to enable accurate locating 			
5.5 Overload warning	If the RD8200 becomes overloaded, users will be alerted by a flashing mode icon. Both the depth and current measurements will be disabled in the event of an overload.			
5.6 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 			
5.7 iLOC®	Metric: Remote transmitter control from up to 450m away ³ Imperial: Remote transmitter control from up to 1400' away ³ Control transmitter frequency, power level and SideStep			
5.8 SideStep®	Enables locating where other signals are interfering, and without compromising the optimum locate frequer Remotely shifts the locate and transmitter frequency by several Hz, out of the bandwidth of other locat signals that may be interfering with the locate			
5.9 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			
5.10 Survey Measurements	Store up to 1,000 survey points within the locator, and append GPS data from internal GPS Export data immediately or as a batch over Bluetooth			
5.11 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"			
5.12 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			
5.13 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			
5.14 Integrated GPS option	Faster surveying using integrated GPS – no need for a separate hand-held device			

6. Configurability

6.1 Phone operating system	Android™ iOS®		
6.2 Option selection	All options can be enabled or disabled on the locator or using the RD Manager PC software		
6.3 Languages supported	Fourteen: English, French, German, Dutch, Polish, Czech, Slovakian, Spanish, Portuguese, Swedish, Italian, Turkish, Russian, Hungarian		
6.4 Mains power network options	50 Hz or 60 Hz		
6.5 Mode selection	All locate modes can be individually enabled or disabled		
6.6 Active frequency selection	All active frequencies available can be individually enabled or disabled		
6.7 Passive mode selection	All passive modes can be individually enabled or disabled		
6.8 StrikeAlert	Enable / disable		
6.9 Swing warning	Enable / disable		
6.10 Haptic vibration	Enable / disable		
6.11 Peak+ arrow selection	Guidance arrows or Null arrows Selected using the locator menu or with a long press of the antenna key		
6.12 iLOC Connectivity	On/Off		
6.13 Data export protocols supported	PPP/choice of 3 ASCII formats. Optionally append positional data		
6.13 Time/date setting	Correct or update locator real-time clock using the RD Manager PC software or GNSS signals		
6.15 CD Reset	Reset CD phase analysis with a single long press of the frequency key		
6.16 Audio	Set audio tone frequency level high or low		

7. Connectivity

7.1 Wireless connections	2 x Bluetooth 2.0 – SPP profile, class 1 2 x Bluetooth Low Energy 5.0			
7.2 iLOC remote transmitter control range ³	Metric: Up to 450m Imperial: Up to 1400'			
7.3 iLOC remote transmitter control functions	Set transmitter frequency Set transmitter power output level Transmitter standby SideStep			
7.4 Wired connections	Type C USB (cable included as standard): Connect to a PC to configure and update locator and to retrieve usage log data 3.5mm Stereo jack: Connect wired headphones Accessory port: Connect Radiodetection accessories			

8. Data capabilities

Keys pressed Audio status Volume Menu in use Battery status			
Audio status Volume Menu in use			
Audio status Volume Menu in use			
Volume Menu in use		Latitude	
Menu in use		Longitude	
		Altitude	
Battery status		GNSS mode	
		GNSS date and time	
User warnings sta	ntus	Horizontal Dilution	
StrikeAlert status		Geoid	
Bluetooth status		DGPS Time and ID	
Fault find arrow		Geoid Units	
Sidestep status		GNSS fix	
Language		Number of satellites	
Depth units		Altitude units	
Power setting		Time reference	
Compass setting			
CD reset status			
Swing angles			
Utility			
Date and time			
Up to 1,000 data records			
	GNSS data:		
Log #		Position Source Type	
Survey Reference		Horizontal Accuracy	
	Vertical Accuracy	<i>y</i>	
	RTK fix time		
	RTK correction a	ge	
	VDOP		
	PDOP		
	HDOP		
	GPS day		
	GPS month		
	GPS year		
	GPS UTC value		
	Latitude		
	Longitude		
	GPS Fix		
	Number of Satell	ites	
	Altitude		
	Altitude Units		
	Geoid		
	Geoid Units		
	DGPS Time		
	DGPS ID		
	Time Indicator		
ent			
Bluetooth – 'live,' per measurement Bluetooth – batch export PPP ASCII (choice of 3 formats)			

9. Power options

9.1 Rechargeable	Custom Lithium-Ion (Li-Ion) battery pack	
9.2 Battery run-time (continuous) ⁴	Li-lon pack:	18 hours
9.4 Charging options (Li-lon pack)	Mains charger: Automotive charger:	100-250 Volts AC, 50/60 Hz 12-24V DC
9.5 Charging time (Li-lon pack)	3 hours to 80% from empty with maintenance trickle charging thereafter	

10. Physical Characteristics

10.1 Design	Ergonomic, balanced and lightweight design for comfortable use during extended surveys		
10.2 Construction	Injection Molded ABS Plastic		
10.3 Weight	Lithium-Ion battery pack fitted: Metric: 2.4kg Imperial: 5.2lb		
10.4 Ingress Protection rating	IP65 Protected against dust ingress and jets of water ⁵ applied from any direction		
10.5 Display type	High contrast custom made monochrome LCD		
10.6 Audio options	Built-in waterproofed speaker 3.5mm headphone socket		
10.7 Operating temperature ⁶	Metric: -20°C to 50°C Imperial: -4°F to 122°F		
10.8 Storage temperature	Metric: -35°C to 70°C Imperial: -31°F to 158°F		
10.9 Unit dimensions	Metric: 687mm x 350mm x 137mm Imperial: 27.0" x 13.8" x 5.4"		
10.10 Shipping dimensions	Metric: 737mm x 277mm x 396mm Imperial: 29.0" x 10.9" x 15.6"		
10.11 Shipping weight	Includes: RD8200SG with lithium-ion battery fitted Mains charger + lead RD8200SG Bag Phone holder User guide RD8200SG box Metric: 5.5kg Imperial: 12.1 lb		

11. RD Manager Online Supporting PC Software

11.1 Operating System Compatibility	Microsoft® Windows® 10 64-bit		
11.1 Operating System Compatibility	WICOSOFT WINDOWS TO 04-DIT		
11.2 Locator system compatibility	Radiodetection RD7200, RD8200 and RD8200SG Precision Locators		
11.3 Functions	 Locator configuration eCert® remote calibration certification Factory calibration certificate retrieval Usage-logging data collation and export User account management Locator software update Survey Measurement retrieval 		
11.4 Data export formats	.csv for database and spreadsheet applications .xls / .xlsx for Microsoft® Excel® .kml for Google Earth™		

12. Warranty and Maintenance

12.1 Manufacturer's warranty duration	3 years standard, on registration						
12.2 Recommended calibration and maintenance schedule	Annual, or at the beginning / end of a lease period if earlier						
12.3 eCert remote calibration	 Remote calibration certification using an internet connection to Radiodetection Recommended schedule: annual, or at the beginning / end of a lease period 						
12.4 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 						
12.5 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.						
12.6 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						
12.7 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.						

13. Certification and Compliance

13.1	Standards	
	CE Safety:	EN 61010-1:2010
	CE EMC:	ETSI EN 301 489-3 (V1.6.1) ETSI EN 301 489-17 (V2.2.1) EN 61326-1:2013
	CE RF:	ETSI EN 300 328V2.2.2 (2019-07) ETSI EN 300 413 V1.2.1 (2014-04) ETSI EN 300 330-2 (V1.5.1) ETSI EN 300 440-2 (V1.4.1)
	CE SAR:	EN 50566 EN 62479 IEC 62209-1528:2020
	ENV (Environmental):	EN 60529 1992 EN 60068-2-64:2008 Test Fh ETSI EN 300 019-2-2:1999 (per Table 6)
13.2	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
13.3	Radio FCC, IC	
	FCC EMC:	47CFR 15.107 47CFR 15.109 ICES-003 Issue 7, January 2020
	FCC RF:	47CFR 15.207 47CFR 15.209 RFC 15.247
	FCC SAR:	FCC 47 CFR part 2 (2.1093)
	ISED Certification No:	IC: 3893A-CLASSIC IC: 3147-BL652
	ISED SAR:	RSS-102 Issue 5, March 2015
13.4	Environmental	WEEE compliant ROHS compliant
	Manufacturing	ISO 9001: 2015

14. Compatible Accessories

	Accessory	Part description						Part number
14.1	Lithium-lon battery packs	Li-lon rechargeable battery mains kit (Includes mains charger) Li-lon rechargeable battery pack (no charger)						10/RX-MBATPACK-V2-XX (XX = AU, EU, UK, or US) 10/RX-BATPACK-V2
14.2	Lithium-lon battery chargers	Li-lon automotive charger Li-lon mains charger						10/RX-ACHARGER-V2 10/RX-MCHARGER-V2-XX (XX = AU, EU, UK, or US)
14.3	Transportation and storage accessories – For combined locator and transmitter	Soft Carry Bag	10/RD82SGBAG					
14.4	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
14.5	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
14.6	Sondes Battery powered signal transmitters for tracing or		Diar					
	locating non-conductive utilities	S6 Microsonde	6	In	m	Ft 6½	(Hz)	10/SONDE-MICRO-33
		S9 Minisonde	9	3/8	4	13	33k	10/SONDE-MINI-33
		S13 Super Small Sonde	13	1/2	2	6½	33k	10/SONDE-S13-33
		S18 Small Sonde	18	3/4	4.5	14½	33k	10/SONDE-S18A-33
							33k	10/SONDE-STD-33
		Standard C-Sonde	39 11% 5	16½	8k	10/SONDE-STD-8		
							512	10/SONDE-STD-512
		Sewer Sonde	64	2½	8	26	33k	10/SONDE-SEWER-33
		Super Sonde	64	2½	15	50	33k	10/SONDE-SUPER-33
		Flexi Sonde	23	7/8	6	20	512	10/SONDE-BENDI-512
14.7	Submersible antennas	512Hz Submersible DD Antenna 640Hz Submersible DD Antenna 8kHz Submersible DD Antenna					10/RX-SUBANTENNA-512 10/RX-SUBANTENNA-640 10/RX-SUBANTENNA-8K	
14.8	FlexiTrace™ - 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 propelling Radiodetection sondes through pipes to trace the path and locate blockages	Length		Diameter		
		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
4.10	A-Frame – Used for locating sheath faults on cables and coating defects on pipelines	A-Frame (inclu A-Frame Bag	des A-Frame Lead		10/RX-AFRAME 10/RX-AFRAME-BAG	
14.11	Headphones	Recommended	for use in noisy e		10/RX-HEADPHONES	
4.12	Calibration Certificates	Locator Calibra locator order)	tion Certificate, p	10/CALCERT		
		eCert Calibration	on Credit	10/ECERT-RD72/RD82		

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

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 backlight and vibration motor 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.

RADIODETECTION®



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