RADIODETECTION

SPX

Tx transmitter specification

Precision 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 RD8200, RD7200, marker locator and PCM ranges
1.2 Product Descriptions:	Signal transmitter
1.3 Intended Use:	Multi-function transmitter
1.4 Standard Equipment:	▪ Transmitter ▪ Integrated tool tray ▪ Earth spool ▪ Earth spike ▪ Direct connection leads ▪ Magnet

2. Performance

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

3. Power Output

3.1 Induction settings:	10%, 20%, 50% and 100% of maximum				
3.2 Direct Connection:	4 signal levels				
	CD Frequencies*	Level 1	Level 2	Level 3	Level 4
	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*	Level 1	Level 2	Level 3	Level 4
	163Hz – 4 kHz	10mA	50mA	200mA	500mA
	8kHz – 33kHz	5mA	20mA	100mA	500mA
	65kHz – 200Hz	2mA	10mA	50mA	200mA

* Model dependent, Maximum current

4. Transmit Functions

4.1 Active Frequencies*	*Operation Mode*	Tx-5	Tx-10	Tx-10B iLOC
163Hz	DC CD Clamp			▪
208Hz				▪
273Hz				▪
340Hz				▪
400Hz				▪
440Hz				▪
460Hz				▪
480Hz				▪
484Hz				▪
491Hz				▪
512Hz		▪	▪	▪
560Hz				▪
570Hz		▪	▪	▪
577Hz		▪	▪	▪
584Hz				▪
624Hz				▪
640Hz		▪	▪	▪
760Hz		▪	▪	▪
815Hz				▪
870Hz		▪	▪	▪
920Hz		▪	▪	▪
940Hz	DC Induction CD Clamp	▪	▪	▪
982Hz				▪
1090Hz		▪	▪	▪
1450Hz		▪	▪	▪
4kHz (4096Hz)	DC Induction CD Clamp Signal Clamp LPC/LCC	▪	▪	▪
8kHz (8192Hz)		▪	▪	▪
8440Hz		▪	▪	▪
9.8kHz (9820Hz)		▪	▪	▪
33kHz (32,768Hz)		▪	▪	▪
65kHz (65,536Hz)		▪	▪	▪
82kHz		▪	▪	▪
83kHz (83,000Hz)		▪	▪	▪
83kHz (83,077Hz)		▪	▪	▪
131kHz (131,072Hz)		▪	▪	▪
200kHz		▪	▪	▪

(*) DC = Direct Connection, LPC = Live Plug Connector, LCC= Live cable Connector

4.2 Fault Find	Tx-5	Tx-10	Tx-10B iLOC
8kHz (8192Hz)	▪	▪	▪
CDFF		▪	▪

4.3 Current Direction	Tx-5	Tx-10	Tx-10B 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:	▪ Battery level indicator ▪ Operation mode readout ▪ Standby icon ▪ Output level indicator ▪ Mode of operation indication ▪ Induction ▪ Direct connection ▪ Clamp mode ▪ DC power connected indicator ▪ A-frame: Indicates when the transmitter is in Fault-Find Mode ▪ CD Mode: Indicates when the transmitter is in Current Direction Mode ▪ Voltage warning indicator: Indicates that the transmitter is outputting potentially hazardous voltage levels or high voltage across DC output leads ▪ Volume level indicator ▪ Pairing icon: Appears when the transmitter and locator are connected via iLOC ▪ Bluetooth icon: Indicates status of Bluetooth connection. Flashing icon means pairing is in progress (Tx-10B) ▪ 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 (Tx-10 and Tx-10B)
5.2 iLOC™	Allows remote control of the transmitter from a compatible locator, up to 450m (1400 feet) away[1] (Tx-10 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-10B)
5.4 SideStep*auto*	Automatically selects the best frequency to use based on the load impedance (works only in 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 (Tx-10 and Tx-10B)
5.7 Maximum Voltage Selection	Allows 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

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 (10W only for Tx-10 and Tx-10B)
6.7 Max Voltage	Low or High
6.8 SideStep*auto* (OPT F)	Start
6.9 Boost	ON, 5, 10 and 20 Min (Tx-10 and Tx-10B)
6.10 Bluetooth	On, Off, Reset and Pair (Tx-10B)

7. Connectivity

7.1 Wireless connections	Bluetooth class 1 (Tx-10B)
7.2 Wireless range[1]	Up to 450m /1400' (Tx-10B)
7.3 Wired connections	Mini-USB 2.0: Connect to a PC to update transmitter Power In: Connects to an external power supply Accessory port: Connect Radiodetection accessories

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)[2]	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	350 x 220 x 220 mm / 30.8 x 8.7 x 8.7 in
9.4 Ingress Protection rating	IP65: Protected against dust ingress and jets of water[3] 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[4]	-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™ 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 Standards	
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) Li-Ion rechargeable battery pack (no charger)	10/TX-MBATPACK-LION-K 10/TX-BATPACK-LION
LPC – *For connecting the transmitter to domestic mains socket*	Live plug connector with US, UK or EU mains plug	10/TX-LPC-xx (xx = US, UK or EU)
LCC	Live Cable Connector with Crocodile clips	10/TX-LCC
Lithium-Ion battery chargers	Li-Ion automotive charger Li-Ion mains charger	10/TX-ACHARGER-LION 10/TX-MCHARGER-LION
Spare battery tray	8 × D Cell battery tray (MN1300 / LR20)	10/TX-8DCELL-TRAY
Transportation and storage accessories – *For combined locator and transmitter*	Soft Carry Bag Locator backpack and bag for Tx transmitter (without tool tray) Wheeled Flight Case Hard Case	10/LOCATORBAG 10/LOCATOR-BACKPACK-SET 10/RD7K8KCASE 10/RD7K8KCASE-USA
Transmitter 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 Metric: 215mm Locator Clamp Imperial: 8.5” Locator Clamp CD Clamp Signal clamp extension rod	10/TX-CLAMP-50 10/TX-CLAMP-2 10/TX-CLAMP-100 10/TX-CLAMP-4 10/TX-CLAMP-130 10/TX-CLAMP-5 10/TX-CLAMP-8.5 10/TX-CLAMP-215 10/TX-CD-CLAMP 10/TX-CLAMP-EXROD
Flexitrace™ – *Use with a transmitter to trace small diameter pipes*	FlexiTrace 50m / 165’ FlexiTrace 80m / 260’	10/TRACE50-xx 10/TRACE80-xx (xx = GB,D,F or NL)

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

[1] 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.

[2] To provide repeatable measurements, run-time is measured at 7W and 20C.

[3] 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.

[4] At very low temperatures, battery life will be degraded, LCD screen performance may slow and measurement precision may be reduced.

RADIODETECTION

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