



The metocean buoys are carrying **five additional sensors.**

- 1. Nanotag Antennas (Lotek SRX 800 VHF Radio Receiver) (*Buoy*) Nanotag antennas provide species-specific information gleaned from tagged birds. In collaboration with FWS, information shared will include tagged endangered species including **Red Knot**, **Piping Plover** and **Roseate Tern**.
- 2. Bird Acoustic Sensor (Wildlife Acoustics Song Meter SM4 Acoustic Recorder) (*Buoy*) Bird acoustic sensors constantly record diurnal and nocturnal bird calls and will help fill data gaps for spring and fall migrant passerines in particular, including warblers, grosbeaks, buntings, pipits, thrushes and redstarts.
- 3. Bat Ultrasonic Sensor (Wildlife Acoustics Song Meter SM4BAT FS Ultrasonic Recorder)

(*Buoy*) Bat acoustic sensors record migrating bat calls. Migrating bat species commonly occur in August and September and include **Eastern Red Bat**, **Hoary Bat**, and **Silver-haired Bat**.

4. Underwater Acoustic Recorder (Loggerhead Instruments LS1 Acoustic Sensors)

(*Seabed*) Underwater acoustic recorders record vocalizations of marine mammals and some fish.

5. VEMCO Fish Tag Receivers (VEMCO VR2W Single Channel Receiver)

(*Seabed*) VEMCO single channel receivers record species-specific information on tagged fish in the area.

SRX 800

VHF Radio Receiver



The Lotek SRX-receiver remains the telemetry instrument of choice for tracking fish, wildlife and birds within their natural environment since 1991. SRX 800 inherits reliability and sensitivity from predecessors SRX 400 and SRX 600, with additional features, such as simultaneous beeper and coded transmitter tracking, and new, weather resistant packaging. Best of all, affordability has been significantly increased without sacrificing quality. The SRX 800 is the latest standard on which to base your next telemetry project.

Key Features

Aquatic, Avian, Terrestrial

- Reliable: Lotek standard <u>two-year</u> warranty based on field proven technology
- Versatile: Manual tracking or autonomous datalogging for both "beeper" & coded transmitters
- Scalable: Wide range of receiver configurations to meet application requirements and budgets





- Receivers
- Dataloggers
- Radio transmitters

Acoustic transmitters
Archival tags
GPS systems



- Hydrophones
 Mireless bydrophor
- Wireless hydrophones
- 2D/3D Position systems
- Sensor transmitters
- Accessories
- Consulting

SRX 800

Applications

- Species migration patterns
- Presence/absence monitoring
- Survival studies
- Passage/guidance efficiency
- Species interactions
- Critical habitat use

Specifications

GENERAL Size: Weight with batteries: Batteries

Operating Temperature Range: Operating Life to Battery Exchange: Memory/Record Storage Capacity: Display Data (mobile tracking mode):

ELECTRICAL

Operating Voltage Range: Operating Frequency Range: Channel Spacing: Minimum discernible audio level sensitivity: Minimum discernible software sensitivity: Dynamic Gain Control Range: I/O: Antennas



8 x 21 x 25 cm 2.2 Kg (including batteries) Six (6) primary alkaline (included) or rechargeable NIMC C-cells -20° C to +55° C 12/16 Hours (primary cells at 20° C backlight on/off) 4 - 16 Mb (250K - 1M records) Frequency, code, signal strength, sensor data

9 VDC 8 or 26 MHz Band (within 138 - 218 MHz) 1KHz -150 dBm -135 dBm 90 dB RS-232 and USB 1 - 8

Accessories

Manual included AC adapter included SRX Host software included Lotek case and/or carry strap 12V car and battery adapters Antenna switch box sold separately

Please speak with your Lotek representative to determine what accessories are included with each model.

Preliminary specifications listed are subject to change. Please contact your Lotek representative for current specifications. SRX800-D-series in protective case





Tel: 905-836-6680 Fax: 905-836-6455

FISH & WILDLIFE MONITORING Innovative solutions for a sustainable future. Web: www.lotek.com Email: biotelemetry@lotek.com



SONG METER SM4 ACOUSTIC RECORDER

- **OVERVIEW**
- ► SPECIFICATIONS
- ▶ MICS & ACCESSORIES
- **TUTORIAL VIDEOS**
- **BUY**

SPECIFICATIONS

RECORDING TECHNOLOGY:

• Two-channel, 16-bit PCM .wav files or compressed .w4v files

RECORDING BANDWIDTH:

• 20Hz – 48kHz

SAMPLE RATES:

• The recorder supports the following sample rates in samples per second on one or two channels: 8000, 12000, 16000, 22050, 24000, 32000, 44100, 48000, 96000

BUILT-IN MICROPHONES (2):

- Directional Characteristic: Omni-Directional
- Sensitivity: -33.5 dB +/- 3 dB at 1 kHz (0 dB=1 V/Pa)
- Signal to Noise Ratio: 80 dB Typ. at 1kHz (1 Pa, A weighted network)
- Max Input Sound Level: 122 dB SPL Typ.

View Microphone Response Charts

RUN-TIME:

• Up to 400 hours with 4 D-cell Alkaline or 250 hours with NiHM batteries

NOTE: Run times can vary by as much as 50% depending on the characteristics of specific brands and models of flash cards, the kind and quality of batteries used (alkaline versus rechargeable), temperature and configuration. We recommend SanDisk brand SDHC/SDXC cards.

POWER OPTIONS:

- Internal power using 4 D-size alkaline or rechargeable NiHM batteries
- External power via optional SM3/SM4 Power Cable

STORAGE:

- 2 SDHC/SDXC flash card slots (Class 4 or greater)*
- More than 1 terabyte total capacity using 2 512GB SDXC cards
- Compression is available to further increase storage capacity *We recommend using SanDisk SDHC/SDXC cards. You can buy them from our store.

DIMENSIONS:

- Height: 8.6" / 218 mm
- Width: 7.32" / 186 mm
- Depth: 3.1" / 78 mm

WEIGHT:

- 1.6 lbs / .73 kg without batteries
- 2.9 lbs / 1.3 kg with batteries

ENCLOSURE MATERIAL:

• Polycarbonate

ENCLOSURE ENVIRONMENTAL PROTECTION:

• Fully weatherproof

OPERATING TEMPERATURE:

-4°F to +185°F or -20°C to 85°C

WARRANTY:

• 3 years

TYPICAL FREQUENCY RESPONSE: BUILT-IN MICROPHONES OR SMM-A2 ACOUSTIC EXTERNAL MICROPHONE

- Sensitivity built-in: -35 ±4 dB (0 dB=1V/pa@1kHz)
- Sensitivity SMM-A2: -9 ±4 dB (0 dB=1V/pa@1kHz)
- Signal-to-Noise Ratio: 80dB typical at 1kHz (1 Pa, A weighted network)
- Dynamic Range with Preamplifier: 14dB 100dB SPL at 0dB gain
- Dynamic Range without Preamplifier: 39dB 126dB SPL at 0dB gain

UPCOMING CONFERENCES

- ► LEGAL DOCUMENTATION
- ▶ ABOUT US

20 [dB]

10

0

-10

-20

-30

10

► ACTIVATE SOFTWARE

- **PRIVACY POLICY**

- AUTHORIZED RESELLERS ▶ SITE SEARCH
- **CONTACT US**

- Sensitivity: -11 ±4dB (0dB=1V/pa@1kHz)
- Signal-to-Noise Ratio: > 68dB
- Dynamic Range: 26dB 102dB SPL at 0dB gain



1000 [Hz]

10000

TYPICAL FREQUENCY RESPONSE: SMM-A1 ACOUSTIC EXTERNAL MICROPHONE

100

SONG METER SM4BAT ULTRASONIC RECORDER

- **OVERVIEW**
- ► SPECIFICATIONS
- ▶ MICS & ACCESSORIES
- **TUTORIAL VIDEOS**
- **BUY**

SPECIFICATIONS

RECORDING TECHNOLOGY:

- Single-channel
- SM4BAT FS: 16-bit PCM .wav files or compressed .w4v files
- SM4BAT ZC: Zero-Crossing

SAMPLE RATES:

 Full-Spectrum, single-channel; 192kHz, 256kHz, 384kHz, 500kHz

RUN-TIME:

- SM4BAT FS: Up to 450 hours (e.g. 45 10-hour nights), depending on bat activity
- SM4BAT ZC: Up to 700 hours (e.g. 70 10-hour nights)
- NOTE: SM4BAT FS and ZC run times can vary by as much as 50% depending on the characteristics of specific brands and models of flash cards, the kind and quality of batteries used (alkaline versus rechargeable), temperature and configuration. We recommend SanDisk brand SDHC/SDXC cards.

POWER OPTIONS:

- Internal power using 4 D-size alkaline or rechargeable NiHM batteries
- External power via optional SM3/SM4 Power Cable

STORAGE:

- 2 SDHC/SDXC flash card slots (class 4 or greater) We recommend using SanDisk SDHC/SDXC cards. You can buy them from our store.
- More than 1 terabyte total capacity using 2 512GB SDXC cards

• Compression is available to further increase storage capacity

DIMENSIONS:

- Height: 8.6" / 218 mm
- Width: 6.0" / 152 mm
- Depth: 3.1" / 78 mm

WEIGHT:

- 1.6 lbs / .7 kg without batteries
- 2.9 lbs / 1.3 kg with batteries

ENCLOSURE MATERIAL:

• Polycarbonate

ENCLOSURE ENVIRONMENTAL PROTECTION:

• Fully weatherproof

OPERATING TEMPERATURE:

• -4°F to +185°F or -20°C to 85°C

WARRANTY:

• 3 years

ULTRASONIC MICROPHONE PLOTS











WHICH BAT DETECTOR IS RIGHT FOR YOUR RESEARCH?

Check out our handy comparison chart showing the features and specs of each of our detectors.

VIEW CHART

- ► CONTACT US
- ► AUTHORIZED RESELLERS
- ▶ SITE SEARCH
- ► ACTIVATE SOFTWARE
- PRIVACY POLICY
- ▶ ABOUT US
- ► LEGAL DOCUMENTATION





Applications

- Noise monitoring
- Seismic and pile driving
- Marine mammal monitoring
- Fish monitoring

Loggerhead Instruments is the industry leader in underwater passive acoustics recording with over 10 years of experience. Loggerhead recorders are in use throughout the world's oceans.

LS1

Features

- Includes everything needed to make recordings
- Sample rate: 44.1 kHz
- Wav files saved to removable microSD
- Up to 4 microSD cards for huge storage
- Continuous or duty cycle recording
- Hydrophone easily removable for travel
- Hydrophone status LED
- Interchangeable hydrophones with custom gain settings
- Alkaline batteries (12 D-cell) make transportation easy
- Housings
 - PVC (17 x 4.5"): 300 m
 - o Aluminum (25 x4.5"): 3000 m

Hydrophone Options:HTI-96-min (2 Hz - 22 kHz)Standard sensitivity:-170 dBV re:1μPa (US, Europe)Standard export:-180 dBV re:1μPa (China)Intense sound:-210 dBV re:1μPa (worldwide)

Example Deployment miles				
Scenario	Record Duration (s)	Sleep (s)	Power Duration (days)	GB
Continuous (5 minute files)	300	0	50	381
5 minutes every 10 minutes	300	300	95	362
1 minute every 10 minutes	60	540	344	263
10 seconds every 10 minutes	10	590	760	96

Example Deployment Times

Mounting

Optional mounting brackets make it easy to attach the DSG-ST to an underwater mooring, bottom mount, or a subsurface line.

VR2W-180 kHz Single Channel Receiver





Designed to operate with our line of 180 kHz tags

The VR2W-180 kHz receiver is cost effective, compact, easy to use, long-lasting and flexible, making it ideal for remote, long term monitoring of small fish species.

Juveniles, Smaller Fish, More Species

The VR2W-180 kHz is used with the family of 180 kHz transmitters (V4, V5 and V9-180 kHz). The v4 and V5 enable researchers to track and monitor smaller fish and a broader range of speciesthan ever before. The introduction of the V9-180 kHz tag has expanded VEMCO's 180 kHz capability to include longer life tags that can be used on larger animals. 180 kHz tags have been used widely on a variety of fish species from salmon smolts to arctic cod to various reef species.

Why 180 kHz Frequency?

Choosing the 180 kHz frequency enabled VEMCO to develop small, lightweight tags that would operate well in both salt and fresh water environments.

Features

- Fast upload using Bluetooth[®] wireless technology - after retrieving your receivers from the water, you can upload data quickly and from up to 7 receivers simultaneously
- Substantial data storage capacity -16 MBytes (~1.6-million detections)
- Field upgradable design allows upgrade of unit in the field with future receiver enhancements



VR2W-180 kHz Specifications		
Dimensions	308 mm long x 73 mm diameter	
Weight	1190 g in air, 50 g in water	
Power supply	1 -3.6 V Lithium D cell battery	
Battery life	Approximately 8 months	
Maximum depth	500 metres	
Receiver frequency	180 kHz	
Storage	16 MBytes flash memory Approximately 1.6-million detections	



Tel: (902) 450-1700 Fax: (902) 450-1704

www.vemco.com

The VR2W-180 kHz operates with VL2

The VEMCO User Environment (VUE) PC Software for initialization, configuration and data upload from VEMCO receivers allows users to combine data from multiple receivers of varying types into a single integrated database. Studies using 69 kHz and 180 kHz tags can also be combined into one VUE database.

The VEMCO Bluetooth Communications Package includes everything you need to talk to your VR2W:

PC software

- VUE Software
- Software Manual
- Two Magnetic Activator Probes
- Adapter for USB to Bluetooth[®]

VUE requires Windows XP SP3, VISTA, Windows 7, 8 and 10 operating systems. See VEMCO's website for more details on VUE Software.

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