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LSTN2

Explore a whole new world of sound

MANUAL & USER GUIDELINES

The new, low-cost, high-quality listening device for marine wildlife, ecotourism, research and recreational use



BOATING – amaze friends and visitors with the sounds of underwater marine life. Explore the noises generated by a wide variety of sea animals.



ECOTOURISM – perfect for boat operators, ecoparks, nature reserves and sea life centres. Marine life can be heard even when not visible – greatly extending the visitor experience.



KAYAKING – find out what's going on around you underwater as well as on the water. Place the LSTN2 on top of your kayak and listen to the world below you.



RESEARCH – the LSTN2 is proficient enough to be used effectively by students, university researchers and dedicated enthusiasts.



EDUCATION – the LSTN2 enables schoolchildren and students to discover nature for themselves, providing first hand experience on field trips and information for science projects.



FAMILY – explore the natural world at first hand – from a garden pond with children, to research as part of a university course.

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TECHNICAL SPECIFICATIONS

Control case size: 140mm x 78mm x 30mm

Hydrophone body size: 23mm diameter x 110mm length

Hydrophone type: Piezo in flex mode 15mm diameter 0.5mm width

Hydrophone packaging: Chrome plated brass potted with polyurethane

Frequency range: 10Hz to 180KHz

Operating temperature: -40C to +55C

Cable type: Polyurethane

Cable length: 10 metres

Audio output: Mono fixed volume

Audio output connectors: 2 x 3.5mm TRRS jack

Supplied with: 1m TRRS 3.5mm male to male cable

Battery: 9V (PP3)



SET UP

The LSTN2 is ready to use, out of the box, complete with pre-installed 9V PP3 battery. To test the device is working correctly, plug a pair of headphones into the 'Audio out' jack (2) and switch the LSTN2 on. With headphones on, lightly tap the 'Hydrophone element' (6). The response should be a relatively loud thumping sound. The hydrophone is very sensitive to vibrations and will pick up any in your surroundings, including music and voices. It is, however, much more sensitive to sound waves once submerged.

USING THE LSTN2

Insert the 'Hydrophone element' (6) into the water and switch the LSTN2 on. The LSTN2 is designed to work in any aquatic environment and pick up sound waves between 10Hz and 180KHz. For optimum results you can alter the way you set up the LSTN2 depending on what you want to hear and your environmental situation. When using on a boat, you should ideally switch off the engine and allow the boat to drift, otherwise the LSTN2 will pick up significant engine noise and impede your ability to hear other sound sources. The LSTN2 cable can pick up a small amount of noise when rubbing or banging against something like the side of a boat. To reduce this noise, you can attach the cable to a pole, float or dampening material, thereby moving the cable away from the edge and improving your listening experience. The LSTN2 is provided with 10m of cable, so experiment with altering the depth to achieve better results.

The LSTN2 is not designed to be towed from a moving boat.

CHANGING THE BATTERY

To replace the battery, you must first remove the rubber cover by popping it off the hand-held unit and sliding it down the cable. Remove the battery cover on the back of the LSTN2 by sliding it off. The old battery should pop out easily. When inserting the new battery, take care the + and - battery terminals are orientated correctly. The symbols are displayed directly below the terminals.

USING A SPECTROGRAM

The LSTN2 is designed to interface with mobile devices such as smartphones and tablets through the use of its 'Device out' 3.5mm jack (1). There is a large range of free spectrogram apps for both Android and iOS. We recommend SpectrumView from Oxford Wave Research. To use the LSTN2 with one of these spectrogram apps, simply take the TRRS 3.5mm male to male cable provided with the LSTN2 and connect between the device out port (1) and the jack port on your device. Your device will now use the LSTN2 as an external microphone.



SpectrumView and SpectrumView Plus from Oxford Wave Research are iOS apps that allow users to easily visualise sounds and frequencies present in their environments, using a high-quality real-time spectrogram and spectrum analyser display, with advanced configurable analysis options.

RECORDINGS AND INTERFACING WITH OTHER DEVICES

The LSTN2 can be connected to off-the-shelf recording devices as long as they have external MIC input capability. Simply use the 'Audio Out' jack (2) with the 3.5mm TRRS male to male cable provided to connect the LSTN2 and recording device. PCs, video recorders and a variety of other electronics can have external MIC inputs and should connect to the LSTN2. Not all manufacturers use the same 3.5mm jack configuration, so it is possible the LSTN2 will not work with some devices. We highly recommend trying the LSTN2 with a device before purchasing it.

ELECTRICAL INTERFERENCE

The LSTN2 is designed with as much interference immunity as possible. The signal is amplified and filtered at its source, then sent differentially to the hand-held unit where it is filtered again. However, as with all electronic devices, it is susceptible to interference and may pick up electrical noise on occasion. This should not greatly affect your LSTN2 experience. To prevent interference from a smartphone or tablet when making recordings, set the device to airplane mode, if available.



SAFETY

Using the LSTN2 in certain environments, such as on a boat, creates the possibility of snagging the cable. For this reason, we recommend never attaching the LSTN2 to any part of a person's body, but using it solely in the hand or strapped down to a secure surface.

MARINE LIFE

Light is limited in the marine environment. To overcome this sensory limitation, many types of marine life have developed an acute sensitivity to sound. Marine mammals are extremely vocal and the use of sound is vital in communication, foraging and navigation. Fish also use and produce sounds and the cavitation bubbles of snapping shrimp are one of the loudest sounds produced by all marine life. There are many other sources of sounds underwater, including sea state noise generated by wind and wave action, and noise produced from human activities such as shipping.

Marine mammals produce sounds to sense their environment. The characteristics of those sounds give a good indication of the types of animals we are listening to and sometimes the species. Toothed whales and dolphins (or odontocetes) have an extensive vocal repertoire and produce sounds over a wide frequency range. The broadband echolocation clicks of sperm whales are powerful and can be heard from several kilometres away. Bottlenose, common and many other species of dolphins produce distinctive sounds including whistles, chirps and moans, clicks and burst pulses to communicate with one another and to navigate their way through the ocean.

The LSTN2 operates across and beyond the audible frequency range of human hearing (approximately 20Hz to 20kHz). This permits the user to detect and listen to a diverse variety of underwater sounds. These could range from biological sounds generated by marine mammals and fish, to the anthropogenic noise emitted by ships and other industrial activities, such as coastal construction and offshore wind farms. Biological sounds from marine animals can become masked by the diverse variety of other noises in the ocean.



TERMS AND CONDITIONS

All instructions should be read and understood before using the LSTN2 hydrophone. Failure to do so will void this warranty. Never attach the LSTN2 to any part of your body and always supervise children when they use the LSTN2.

One year limited warranty

Seiche Ltd warrants the LSTN2 to be free from defects in materials and workmanship under normal application use and service conditions for twelve (12) months from the date of sale to the original consumer purchaser.

What we will do

Seiche Ltd will repair or replace a LSTN2 hydrophone which becomes inoperable due to a defect in material or workmanship during the twelve (12) month period of this warranty. Repair or replacement will be at Seiche Ltd's option.

What is not covered by the warranty

This warranty does not apply to any part which, in Seiche Ltd's judgement, has been subject to misuse, neglect or accident, or which has been damaged through abuse, alteration, improper installation, or application, or negligence in use, storage, transportation or handling, or repaired by someone other than by Seiche Ltd. The warranty does not cover any transportation costs for the return of the unit, or for re-shipment of any repaired or replaced unit. Seiche Ltd reserves the right to refund the purchase price in lieu of repair or replacement. Software is not warranted.

Warranty limitations

Seiche Ltd shall have no responsibility for damage to persons or property, or other loss or injury resulting from a defect in the LSTN2 hydrophone, or from improper use or installation. Under no circumstances will Seiche Ltd be liable for any incidental or consequent damage. Any warranties implied by law, including those of merchantability and fitness for a particular purpose are limited in duration to twelve (12) months after date of original purchase. Seiche Ltd's maximum liability under any warranty, express, implied or statutory, is limited to the purchase price of the unit. The purchaser's exclusive remedy shall be only as stated herein. This warranty is in lieu of all other warranties expressed or implied.

If you have a problem, concern or query

Please contact lstn2@seiche.com for help with setting up your LSTN2 hydrophone, or for on-going practical support. Please contact info@seiche.com for any other queries.

DOs AND DON'Ts

Do not immerse the hand-held unit of the LSTN2 – it is not waterproof.

After the LSTN2 has been used, especially in salt water, wipe moisture from the hand-held unit, and clean the cable (4), hydrophone housing body (5) and hydrophone element (6) with fresh water to prevent long-term corrosion.

If the LSTN2 is to be stored for an extended period, remove its battery.

Be aware of the risk of snagging and damaging the LSTN2 cable on a propeller, hull fittings or underwater obstructions, including the seabed.

When the cable is lowered into the water take care that the hand-held unit cannot fall onto the deck or over the side of the boat.

Make sure that the person in charge of the boat is aware you want to lower the LSTN2 into the water. They will be able to advise you on where to do this – usually on the windward side of the boat.

Always retrieve the LSTN2 cable from the water when the person in charge asks you to or indicates that the boat will soon be underway.

Follow codes of conduct or best practice guidance, if available, when you are close to free-ranging marine mammals.

If a code is not available for your area, use common sense to avoid harassing or disturbing marine wildlife.

Join the **LSTN2 Club** for regular top tips and newsletter by registering at:

lstn2news@seiche.com



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