

DigitalHyd SR-1 - A Self-Recording Digital Hydrophone

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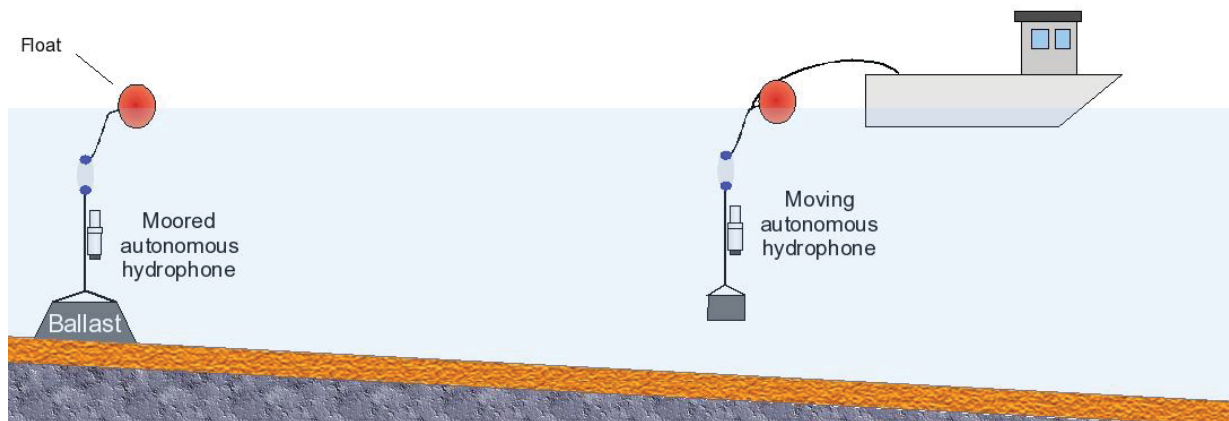
□ **Key words**

Communications - Data management - Sensors / instrumentation / electronics - Software engineering / development

□ **Description**

The digitalHyd SR-1 is an **autonomous recording device designed for user-friendly operation in underwater acoustic signal acquisition activities**. Its compact construction and functionalities allows for the implementation of efficient measurement strategies, thus, avoiding the requirement of large operational human and material resources for deployment and recovery.

The digitalHyd SR-1 records signals in the frequency band from 1Hz to 24.9kHz or 1Hz to 49.8kHz, depending on selected sampling frequency. These signals are stored on a removable memory card with up-to 128GB of capacity, using 16-bit or 24-bit of resolution, and can be opened by conventional media players and signal processing applications. All acquisition information including date, time and gain are available in the header of the files for later analysis. The acquisition can start as soon as the device is powered up or at predefined scheduled dates and times. Programmable parameters include file duration, PGA gain and start-up times, among others. The configuration of all parameters is performed through a USB interface with access compatibility from various types of operating systems.



The digitalHyd SR-1 is powered by a rechargeable lithium-ion battery and is able to remain on for up to 10 hours of continuous acquisition, or various days in stand-by. Battery and memory card are field replaceable, to allow for quick redeployments of the Hydrophone. Optional battery extension packs are available on demand, ex: the 4PACK option expanding the SR-1 to up-to 5x the autonomy.

Applications: The digitalHyd SR-1 has been used in various applications including wave energy device noise monitoring, dolphin monitoring in open waters and captivity, underwater acoustic research in seagrass oxygen production, underwater noise monitoring in coastal aquaculture industries and others. Underwater Noise Monitoring; Bio-acoustics; Underwater Acoustic Research; Acoustic Field Calibration.

Specifications

- Sample Frequency: 52.734 kHz / 105.469 kHz (selectable)
- Sample Resolution: 16 or 24 bits
- Usable Acoustic Band: 1 Hz to 25.8 kHz / 1 Hz to 51.6 kHz
- Receive sensitivity: -162.2 to -126.1 dB re 1 V/uPa
- Programmable Gain Amplifier: 1x, 2x, 4x, 8x, 16x, 32x, 64x
- Input Sound Pressure Level Range: 46.3 dB re 1 uPa to 172.5 dB re 1 uPa
- Memory Card Capacity: up to 128GB (field replaceable)
- Battery: 3.7VDC, 3400mAh, Lithium-Ion 18650
- Battery Life: up to 12h in continuous acquisition; up to 500h in stand-by; expandable with larger battery packs.
- Operation depth: Up to 100 m.



- Case dimension: 50 x 323 mm (diameter x length)
- Case Material: Delrin
- Weight: 0.18 kg (in water), 0.77 kg (in air)
- Real Time Clock: Precision of ± 64 seconds per year
- Operation Temperature Range: 0 °C to 40 °C

□ **Applicability of Technology to Maritime SMES**

Underwater Noise Monitoring, Bio-acoustics, Underwater Acoustic Research, Acoustic Field Calibration and more specifically wave energy device noise monitoring, dolphin monitoring in open waters and captivity, underwater acoustic research in seagrass oxygen production, underwater noise monitoring in coastal aquaculture industries and others.