Hydrophone · Real-Time Intelligent Acoustic Monitoring



Capture underwater sound data at scale with a robust, turnkey hydrophone engineered for realtime noise detection and analysis. Advanced acoustics technology and edge data processing reduce cost and complexity, enabling broader coverage and extended deployments.



Offshore Engineering

Measure changes to the soundscape from construction noise to meet environmental regulations.

Defense & Security

Detect unauthorized vessels, coordinate search & rescue, and improve maritime situational awareness.





Core Specifications

Sensor	Applied Ocean Sciences Borealis
Sensor Type	Piezoelectric
Frequency Range	18 Hz - 25 kHz
Sensitivity	-203 dB re 1V/µPa
Self-Noise	<31 dB re 1 µPa²/Hz
Power Consumption	35 - 75 mW (mode dependent)
Sleep Power	<5 mW in standby mode
Sampling Rates	15k, 20.8k, 31.25k, 62.5k sps (configurable)
Directional Response	Omnidirectional
Pre-amp Gain	26.4 dB before ADC
Bit Depth	24-bit ADC (dithered to 16-bit logged)
Maximum Depth	50m
Power Supply	Spotter's Li-ion battery (solar- rechargeable)
Operating Temperature	-5°C - 35°C
Size (Dia. x Len.)	~51 mm × 254 mm
Weight	0.85 kg (< 2 lb)
Interface Standard	Bristlemouth-native (plug-and-play)



Data Collection & Outputs

Collection Modes

Continuous Always-on recording with scheduled data offload

Duty Cycling Record intermittently to extend battery/SD usage

Event/Trigger Automatic detection triggers high-resolution logging

Data Outputs

Waveform Full acoustic waveform data for detailed analysis

Spectral Frequency domain data for sound characterization

Event/Trigger Timestamped acoustic events based on thresholds

Sound Pressure Level (SPL) Timestamped acoustic events based on thresholds

Sound Exposure Level (SEL) Cumulative sound energy measurements

Our system computes key noise metrics—such as SPL and SEL—by factoring in both the hydrophone's inherent low self-noise and any added noise from the mooring setup. This combined approach ensures that environmental acoustic signals are captured accurately, free from system interference.

Deployment & Best Practices

Configuration Options

Ideal for moored coastal deployments with one Spotter or a network. Integrate up to two more devices (e.g. pressure/oxygen) per Smart Mooring (max 3 total)

Depth Placement

Place hydrophone \ge 5 m below surface to avoid noise interference

Remote Configuration & Controls

Direct control via Spotter Dashboard, binary/ASCII commands, and Sofar remote support



Data Access & Analysis

Spotter Dashboard

View real-time data and insights

API Access

Retrieve data programmatically with our secure API

Onboard Storage

Download complete spectrogram via Spotter and wav files via BOREALIS SD cards for offline analysis

Edge Processing

Host real-time event-detection models with minimal bandwidth—pre-loaded Hydrotwin™ algorithm available

Transmission

Satellite and cellular options

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