PHOENIXZ PTY LTD

AOH-OCTOPUZ: All-Optical Hydrophone Array System

Technology Overview

The **AOH-OCTOPUZ** is an advanced underwater acoustic sensing network developed by **PhoenixZ Pty Ltd**, designed to deliver exceptional range, sensitivity, and reliability in subsea monitoring. The system converts the output of standard electrical hydrophones into optical signals using PhoenixZ's proprietary passive transducer, creating a fully optical sensing link that transmits high-fidelity acoustic data over distances exceeding **100 km** through a single-mode fibre — with **no electrical power** required along the sensing line.

At the core of the system, **power-over-fibre (PoF)** energises miniature preamplifiers positioned beside conventional hydrophones. The amplified signal is optically modulated and transmitted to a remote interrogator or data-acquisition unit. The passive optical transducer introduces virtually no noise, ensuring outstanding **signal-to-noise ratio**, dynamic range, and operational stability — all without maintenance or external infrastructure, making it ideal for long-term ocean deployments.

System Advantages

- **Optical-only sensing path** — simple, low-cost deployment and service-free operation.
- **Ultra-long-range telemetry** —**100 km and more** between sensors and interrogator.
- **High sensitivity and low distortion**, preserving the hydrophone's native response.
- **Compact and lightweight** design, deployable by two-person teams or ROVs.
- **Ethernet-based output**, ensuring seamless integration with existing platforms.
- **Corrosion-resistant housings**, suitable for fixed, towed, or moored configurations.

Applications

The AOH-OCTOPUZ system enables continuous acoustic monitoring across diverse environments. In **defence and security**, it supports seabed surveillance, anti-submarine operations, and autonomous platform sensing. In **oceanography and environmental**

science, it is ideal for studying marine ecosystems, ambient noise, and seismic activity. For **offshore energy and infrastructure**, it provides long-range monitoring of pipelines, subsea assets, and structural integrity.

By merging the proven performance of hydro acoustics with the reliability of optical communication, **AOH-OCTOPUZ** defines a new standard for **long-range, maintenance-free, and power-independent acoustic intelligence**.

AOH-OCTOPUZ/WET END			
Parameter	**Typical Value**		**Notes**
Housing Material	Aluminium / Cast Acrylic Plastic / Stainless steel		Material depending on the depth rate / To be specified by the client
Dimensions	Ø 100 mm, length 200 mm		Without hydrophone
	Ø 100 mm, length 600 mm		With Hydrophone
Weight in Air / Water	2 kg / ~neutral		Neutral buoyancy preferred for deployment.
Cable	Length	>100 km underwater cable	To be specified by the client
	Model	LINDEN-SPE-7407	To be specified by the client
Receiving Sensitivity	−190 dB re 1 V/µPa (±3 dB)		
Dynamic Range	100 – 120 dB		
Equivalent Noise Level (Self-Noise)	40 – 60 dB re 1 µPa²/Hz		
Max Acoustic Input	190 – 200 dB re 1 µPa		

RTU/DRY END			
Parameter	**Typical Value**		**Notes**
Output	Ethernet		Matched to standard data acquisition systems.
Power Supply (if active)	Field Operation	±12 V – ±18 V DC or 24 V single supply	Field Operation: Internal rechargeable battery pack for autonomous operation.
	Masins	240 V AC 60 Hz	Fixed Installation: External 240 V AC mains supply via AC-DC adapter.
Power consumption	12 W/Channel		MAX number of channels per RTU 8
Number of Channels	8		MAX number of channels per RTU 8
Connector Type	2X LC-APC duplex - SINGLE MODE		

	(9/125)	
Form Factor	19″ rackmount, 4U height	
Dimensions	(W × H × D): 482.6 × 177.8 × 255 mm	