



## LDHA-2523

### Low-Power Digital Hydrophone Array

#### Overview

LDHA-2523 is a rugged, bottom-lay, passive acoustic line array with 32 (or 48) digital hydrophones. The hydrophones are evenly spaced by 1.5 m along the array cable and are simultaneously sampled with a bandwidth of 10 - 1400 Hz. Gain is software selectable from 20 - 90 dB in 10 dB steps. This array consumes less than 3 W of power while maintaining an input referenced noise level well below Sea State 0.

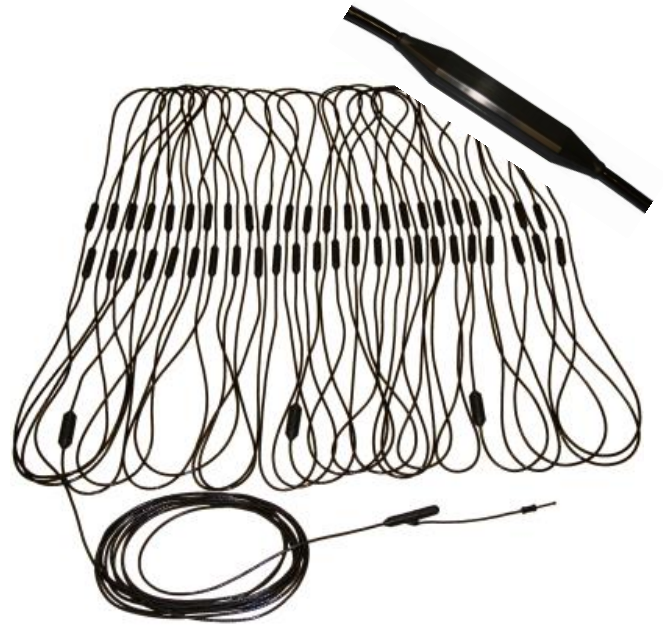
#### Standard Concept of Operation

The LDHA-2523, connects to an Array Receiver (AR) which converts the electrical array data to a fiber optic cable link that runs to an Array Receiver Controller (ARC). The ARC is selected based on the end user operational requirement and is available as an RF surface buoy, shore station, or ship-board interface. Two arrays can be deployed in the coverage area and connected to the same operator station for wide area tracking and detection.

The array sends data over a standard Ethernet link. For real-time monitoring operations, Omnitech can provide customers with sonar operator software or array data can be integrated into existing software packages. The ARC can also be configured for battery operated autonomous detection and continuous acoustic recording.

#### Hydrophones

The LDHA hydrophones contain integrated digitization and communication electronics and acoustic sensor. The hydrophones are wired to the array cable and over-molded with the same thermal plastic urethane as the cable jacket resulting in a continuous, abrasion resistance design. Each hydrophone contains a 3-axis orientation sensor with magnetic and acceleration readings that can be used to determine the deployed array shape to assist with array calibration and beam-foaming.



48 sensor LDHA (left), close-up of hydrophone (top right)

- 32 or 48 Digital Hydrophones, 10 - 1400 Hz
- Input referenced noise well below Sea State 0
- Power Consumption < 3 W
- 55 m long, 26 kg in air (32 sensor version)
- Real-time operation via RF buoy, optical cable.
- Autonomous detection and recording modes supported for battery deployed systems
- Custom configurations, sample rates, and additional sensor types available
- Rapidly deployable from a small craft without special handling equipment



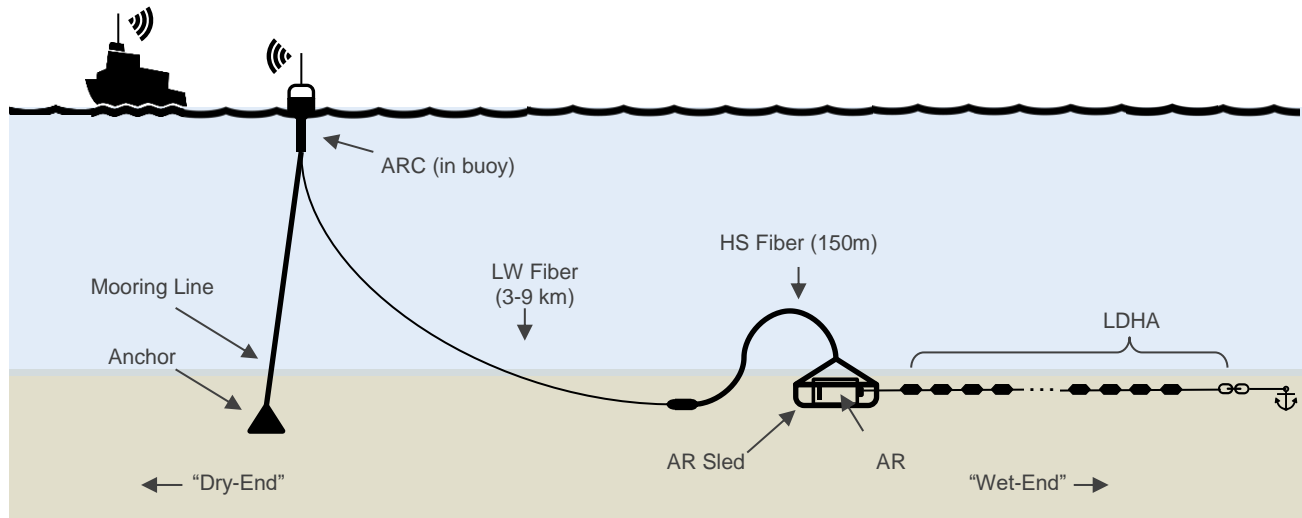
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# Underwater Surveillance Systems



System Deployment (shown with remote RF buoy configuration)

## Performance and Specifications

Parameter	Specifications	Comments
Number of Hydrophones	32 (or 48)	as standard configurations
Hydrophone Spacing	1.5 m	or as per customer specification
Maximum Operating Depth	150 m	
Survival Depth	200 m	
Total Power Consumption	< 3 W (typ.)	full operation, 32 HYDs, data streaming over Ethernet
<b>Hydrophone Elements</b>		
Bandwidth	10 - 1400 Hz	
Dynamic Range	115.5 dB (typ.)	ADC only, excludes gain steps
Noise floor		
@ 10 Hz	< 35 dB re 1 $\mu$ Pa/VHz	Measured at 40 dB gain, based on worst case hydrophone sensitivity and minimum hydrophone capacitance. (equiv. - referred to input in $\mu$ Pa/VHz)
@ 100 Hz	< 29 dB re 1 $\mu$ Pa/VHz	
@ 1000 Hz	< 28 dB re 1 $\mu$ Pa/VHz	
Maximum Unclipped Tonal Signal	~190 dB	uPa(peak) @ 500 Hz, gain = 20 dB
Gain Matching @ 500 Hz	$\pm$ 0.2 dB	
Selectable Gain Range	20 dB – 90 dB	in 10 dB steps calibrated
Sampling Rate	3000 S/sec	



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