Aquarian Audio Products

H2a-XLR Hydrophone User's Guide

Thank you for purchasing your *Aquarian Audio Products* H2a-XLR hydrophone. This hydrophone is designed to provide high-quality audio performance in a low-cost device. It is very durable and will interface directly with professional audio microphone preamps. It offers very good sensitivity and low noise in the human auditory range. The H2a-XLR's streamlined shape and high specific gravity will help to maintain a low working depth in a moving water column. Its compact size and the easy hand of its cable make it very portable and simple to use.

Using the H2a-XLR

The H2a-XLR is terminated with a 3-pin male XLR plug. Wiring is standard: pin 1 is ground, pin 2 is hot and pin 3 unused[1]. This configuration should be compatible with any standard female XLR microphone jack. **Phantom power is required.** Any standard phantom power supply voltage will work. Do not exceed +48V when powering the H2a-XLR. With the connection firmly made and phantom power switched on, there's nothing more to do but adjust levels and take in the sounds of the deep.

Hydrophone care

No special care is required for the H2a-XLR. It is designed to withstand corrosion and the impact of accidental drops, but making an attempt to keep the output plug clean and dry and avoiding unnecessarily rough handling will help to ensure the long-term stability of the product. It is best not to store the hydrophone in a waterproof enclosure. Doing so will trap moisture, salts and minerals that are left on the hydrophone and cable after deployment and increase corrosion problems with the output plug. Making an extra effort to coil the cable nicely when retrieving the hydrophone will help avoid problems with tangles as the cable ages. Most importantly, protect the cable from cuts and abrasions! The H2a-XLR uses a custom-made cable with a very durable urethane jacket. However, it is also designed to be compact and flexible. Kinking the cable, walking on it, or dragging it over a sharp or abrasive surface may damage the cable sheath and eventually cause the hydrophone to fail. Both aquatic and terrestrial animals may attack the cable in an unattended application. Using some kind of cable shroud, such as plastic tubing, can help protect the hydrophone in long-term installations.

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1 Most XLR-terminated microphones are balanced and use Pin 3 for a *cold* (or *low*) side of the signal, which has the same output impedance and is typically complimentary to the signal on Pin 2. This confirguration can be beneficial for common-mode noise reduction when used with a balanced input device. The H2a-XLR runs single-ended. It is a simple output plug variation of our standard H2a. Single-ended operation is preferable in most hydrophone applications because common-mode noise is seldom a problem and the hydrophone consumes less power and has a quieter output with the single-ended drive. The H2a-XLR is very well shielded. The single-ended drive should not be an issue even in very noisy environments and should work well with all phantom powered balanced mic inputs.

Specifications

The H2a-XLR is intended to be a lower-cost and easy-to-use alternative to military and lab-grade hydrophones. Deriving high sensitivity and low noise were made a priority over maintaining strict tolerances. The following specifications are typical of a limited sample group and are not guaranteed. They are for basic comparison information only.

Specifications are dependent upon the audio device to which the H2a-XLR is connected. The hydrophone sensor is capable of picking up sounds from below 20Hz to above 100KHz. The output impedance of the H2a-XLR is set in part by the phantom power supply from the audio device with which the hydrohone is used. Hi-frequency performance is also limited by the output impedance of the hydrophone and the cable impedance—which is a function of length. Please also note that further limitations in your overall system may result from the sampling rate of digital recorders and by the input stage of your audio device's microphone preamp. Despite the uncertainties of above, you should expect to easily capture the entire human auditory range of 20Hz to 20KHz.

The following specifications are based upon using the H2a-XLR with a classic 48V phantom power supply (48V with 6.8K pull-up resistors):

Sensitivity:	-180dB re: 1V/μPa	(+/- 4dB 20Hz-4.5KHz)
Useful range:	<10 Hz to >100KHz	(not measured above 100KHz, approximate sensitivity @100KHz = -220dB re: 1V/μPa)
Polar Response:	Omnidirectional	(horizontal)
Operating depth:	<80 meters	
Output impedance:	1 KΩ	(typical)
Power:	0.6 mA	(typical)
Physical:		(cable and output plug excluded)
Dimensions:	25mm x 46mm	
Mass:	105 grams	
Specific Gravity:	5.3	