



# VADR/RM-6000M Subsea Vehicle Acoustic Receiver System



VADR/RM-6000M Receiver Module with  
VADR-DH Directional Hydrophone

- ◆ **Rated to 6000M Depth**
- ◆ **Designed for both AUV or ROV Mission Profiles**
- ◆ **8 to 45kHz Bandwidth**
- ◆ **Tracks both Acoustic Pingers and Transponders**

The VADR/RM-6000M is a small but rugged “acoustic receiver” used to assist operators of ROVs and AUVs in tracking underwater acoustic sound sources from 8.0kHz to 45kHz, or our ATT-400 series acoustic transponder. Rated to a depth of 6000m, its small size and separate hydrophones allow for flexible mounting onto any subsea vehicle. Through a bulkhead connector mounted on the pressure housing a cable assembly connects the receiver to the hydrophone assembly for receiving the acoustic signal. External power and telemetry data for controlling the VADR/RM-6000M receiver and outputting the data is accessed through another bulkhead connector. Using a RS232 data interface the operator has access to directional indication, operational information, and control functions of the VADR/RM-6000M receiver. In addition, a Windows® based software is also provided with the system to allow the operator easy access to this feature through a PC.

The system is ideal for use on an AUV when used with the VADR-OD Omni-Directional Hydrophone. The unique design of the omni-directional hydrophone allows the receiver to detect any acoustic sound source from 8.0kHz to 45kHz in a 360-degree field of view while providing bearing indication. Using a RS232 data interface and ASCII data string, commands can be written that allow the AUV to detect an acoustic sound source and then direct the AUV to the sound source using the bearing indication provided by the system.



VADR-OD Omni-Directional Hydrophone



VADR-DH Directional Hydrophone

For tracking an acoustic pinger with a ROV, like a “Black Box” beacon, the VADR-DH Directional Hydrophone is selected for use with the VADR/RM-6000M Receiver. Once an operator selects the proper frequency through the VADR/RM-6000M software, the receiver begins to search for the acoustic signal through the directional hydrophone mounted on the front of the ROV. Once received, the signal is processed by the electronics and fed to the software through the ROV’s tether. Using the supplied software, bearing data and signal strength is provided to the ROV operator for navigating the ROV to the target area for recovery.



## RJE International, Inc.

15375 Barranca Pkwy, Suite I-112, Irvine, CA 92618

Tel: 949-727-9399, Fax: 949-727-0070

[www.rjeint.com](http://www.rjeint.com) Email: [sales@rjeint.com](mailto:sales@rjeint.com)



# VADR/RM-6000M Subsea Vehicle Acoustic Receiver System

## Specifications for VADR/RM-6000M System

### **Pinger Receiver Mode**

Receiver Bandwidth: 8 kHz to 45 kHz in 100 Hz increments

Receiver Sensitivity: -100 dB re 1 $\mu$ Pa @ 1 meter

Range Capability: Up to 1500 meters with 164db pinger

### **Transponder Interrogator Mode**

Interrogator Frequency: 26 kHz

Receive Frequencies: 25, 27, 28, 29, 30, 31, 32, 33, 34 kHz

Acoustic Source Level: +190 dB re 1  $\mu$ Pa @ 1 meter

Range Capability: Up to 750 meters using the ATT-400

### **Directional Hydrophone**

Beam Width: 40  $\pm$  5 degrees conical

Bearing Indication:

4 BINS: Left or right, 3, 8, 20 or > 20 degrees

Bearing Accuracy: 5 degrees nominal in BINS 1 and 2

Bearing Resolution: 2 degrees

### **Omni Bearing Hydrophone**

Beam Width: Omni Directional

Bearing Indication: 0-360 degrees in 1 degree increments

Bearing Accuracy: 5 degrees nominal

Bearing Resolution: 1 degree

### **Control and Power Interface**

RS232: 9600 Baud, No Parity, 8 Data Bits, and 1 Stop Bit

Connector: SubConn MCBH5F, 5-pin female bulkhead

Power Source: 8-32 VDC: 24 VDC Nominal

Current drain: 40 ma @ 24 VDC continuous

### **Mechanical/Environmental**

Housing: Aluminum, Hard Coat Anodized

Operational Depth: 6000 meters (19,850ft)

Dimensions:

VADR/RM-6000M: 12.0 cm  $\varnothing$  x 24.5 cm L (4.7"  $\varnothing$  x 9.7" L)

VADR-DH: 12.7 cm  $\varnothing$  x 10.0 cm L (5.0"  $\varnothing$  x 3.9" L)

VADR-OD: 12.7 cm  $\varnothing$  x 12.5 cm L (5.0"  $\varnothing$  x 4.9" L)

Weight:

VADR/RM-6000M: Air 4.0 Kg (8.5 lbs.), Water 1.4Kg (3.1 lbs.)

VADR-DH: Air 1.8 Kg (4.0 lbs.), Water 0.8 Kg (1.8 lbs.)

VADR-OD: Air 2.0 Kg (4.5lbs.), Water 0.8 Kg (1.8 lbs.)



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