



REMUS 6000

**Autonomous
Underwater
Vehicle**

Deep Operations

Custom Design

**Proven Launch and
Recovery System (LARS)**

6000 Meter Depth Rating



HYDROID

Discover » REMUS 6000

Hydroid, LLC was founded in 2001 by the inventors of REMUS to allow this remarkable technology to reach a wider market and to provide for continuous product development. REMUS is the product of years of leading edge research and development, which has culminated in the world's most capable family of AUVs.

Hydroid has grown at an amazing rate and to support this growth, Hydroid now has a staff of over twenty full- and part-time employees that continuously strive for the highest level of product quality and support. This team is enhanced by the organization's growing representative network, which provides local sales and support in nearly 30 nations around the globe.

Hydroid is located in a brand new, state-of-the-art facility located on Cape Cod in Pocasset, Massachusetts. This facility has been uniquely designed to support Hydroid's growing product offerings.

Since its inception, Hydroid has delivered a continuous stream of products through a highly efficient and well organized manufacturing system, which allows for volume production of REMUS vehicles, tracking transponders, and other system components. The result is a highly repeatable system that produces quality products in a timely and efficient manner.

Hydroid's products are backed by the organization's skilled customer service staff, which provides on-site training, system commissioning, and continuous product service and support.



HYDROID

REMUS 6000

FEATURES

LITTORAL TO DEEP OPERATIONS: The versatile REMUS 6000 has been designed to operate in depths ranging from 25 meters to 6000 meters, allowing for a wide spectrum of autonomous operations (4000 and 6000 meter rated configurations available).

CUSTOM DESIGN: The REMUS 6000 can be configured to include a wide array of customer specified sensors depending upon mission requirements. This workhorse provides ample space and power for the most challenging applications.

EASE OF OPERATION: The REMUS 6000 operates using the same proven Vehicle Interface Program (VIP) as the popular REMUS 100 AUV. The highly refined graphical user interface (GUI) makes vehicle maintenance/checkout, mission planning, and data analysis fast and easy. Windows® operation, quick look indicators, quality control checks, and a sophisticated data export capability round out this proven software package.

LAUNCH AND RECOVERY SYSTEM (LARS): The REMUS 6000 launch and recovery system is designed to function off the stern of a ship and can be set up for shipboard operations within a few hours. The LARS is based on a similar operational system, designed by WHOI, which has completed over 1000 launch and recovery operations at sea.

PROVEN REMUS TECHNOLOGY: The REMUS 6000 is based on the same leading edge technology that has brought the REMUS 100 to the forefront of autonomous operations. With tens of thousands of REMUS mission hours to date, Hydroid has become the industry's leading supplier of autonomous products and technology.

SENSORS AND PAYLOAD

STANDARD SENSORS

- ▣ Acoustic Doppler Current Profiler (ADCP)
- ▣ Inertial Navigation Unit
- ▣ Side Scan Sonar
- ▣ Pressure
- ▣ Conductivity & Temperature
- ▣ Iridium
- ▣ GPS

OPTIONAL SENSORS

- ▣ Dual Frequency Side Scan
- ▣ Acoustic Modem
- ▣ Fluorometers
- ▣ Acoustic Imaging
- ▣ Video Camera
- ▣ Electronic Still Camera with 200 watt-sec Strobe Lighting
- ▣ Sub-Bottom Profiler

DEPLOYMENT OPTIONS

- ▣ Launch and Recovery System
- ▣ Operations Van

SHIPBOARD DEVICES

- ▣ Acoustic Transducers
- ▣ GPS Antenna
- ▣ Iridium Base Station
- ▣ Wi-Fi Base Station

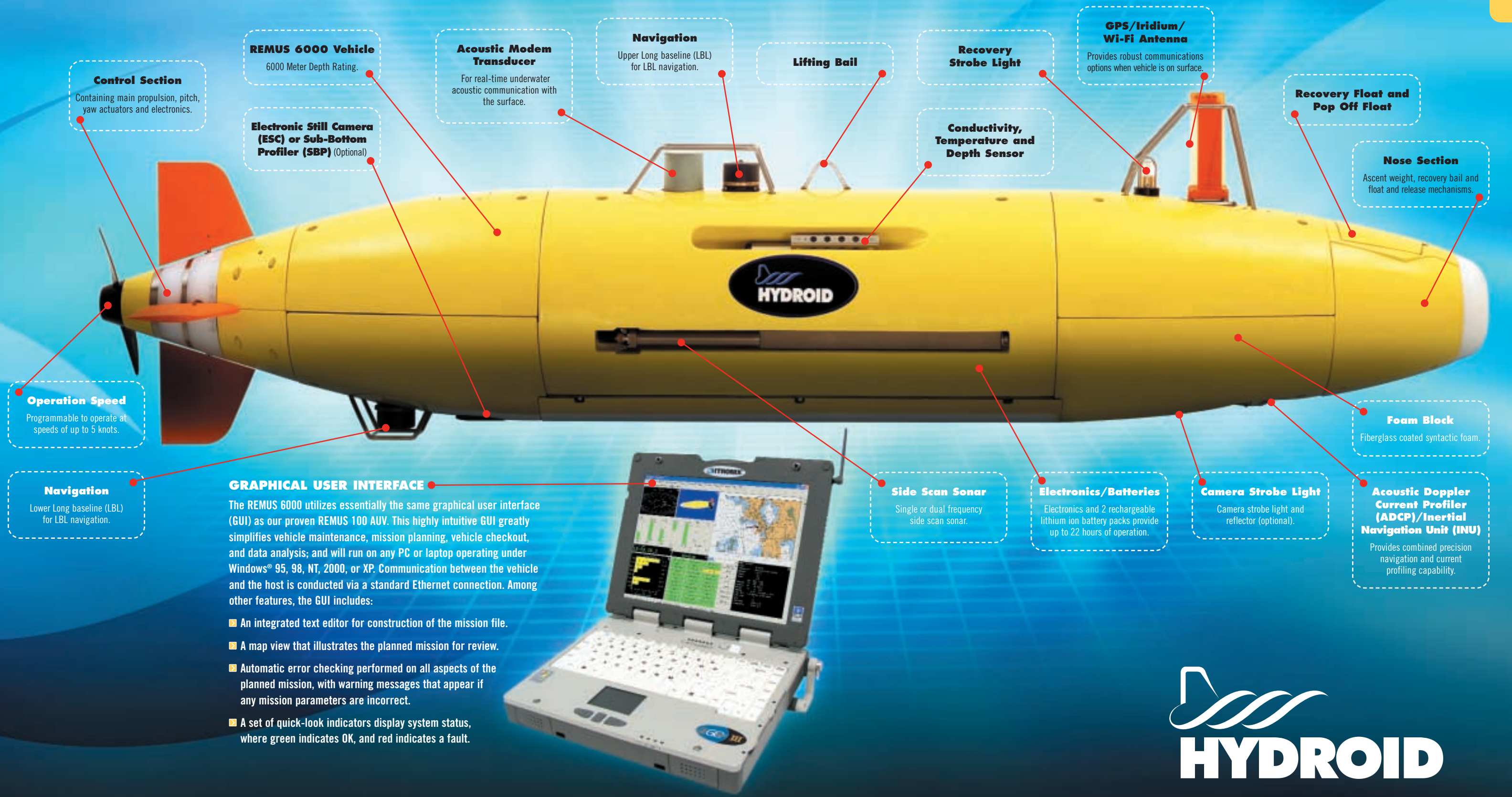
The REMUS 6000 AUV was designed under a cooperative program involving the Naval Oceanographic Office, the Office of Naval Research, and the Woods Hole Oceanographic Institution (WHOI) in support of deep-water autonomous operations. The REMUS 6000 boasts the same proven software and electronics systems found in our highly successful REMUS 100 AUV, with a depth rating, endurance, and payload that allow for autonomous operations in up to 6000 meters of water.

SPECIFICATIONS

Vehicle Diameter	71 cm (28 in)
Vehicle Length	3.84 m (12.6 ft)
Weight in Air	862 kg (1900 lbs)
Max Operating Depth	6000 meters (4000 meter configuration also available)
Energy	11 kWh rechargeable Li-ion battery pack in two pressure housings. A second 11 kWh set is provided with system permitting 2-hour turn around. Charge time is typically 8 hours and the batteries are rechargeable up to 300 cycles or for 5 years under recommended storage conditions.
Endurance	Typical mission duration of 22 hours. Subject to speed and sensor configuration.
Propulsion	Direct drive DC brushless motor to an open 2 bladed propeller
Velocity Range	Up to 2.6 m/s (5 knots) variable over range
Control	2 coupled yaw and pitch fins Altitude, depth, yo-yo, and track-line following provided.
On/Off	Mechanical switch
External Hook-up	Two connectors, one for shore power, and one for shore data. Alternatively, 802.11B wireless network provided via dorsal fin antenna.
Casualty Circuits	Ground fault, leak and low voltage detection; go/no go indicator
Navigation	Long Baseline Transducer-7-15 kHz upward looking transducer Dead Reckon with ADCP Inertial Navigation Unit
Tracking	Emergency transponder, mission abort, ascent weight drop, Iridium, GPS
Communication	Acoustic modem, Iridium, 802.11B Wi-Fi
Standard Sensors	Acoustic Doppler Current Profiler (ADCP) Inertial Navigation Unit (INU) Side Scan Sonar Conductivity & Temperature
Reserve Payload (in water)	27 kg (50 pounds)
Launch and Recovery	Over centered lifting frame; vehicle is in vertical orientation for launch and recovery
Software	GUI based laptop interface for programming, real time mission monitoring and redirection, training, documentation, maintenance & troubleshooting

» THE ANATOMY OF DEPTH

REMUS 6000



REMUS 6000 Vehicle
6000 Meter Depth Rating.

Acoustic Modem Transducer
For real-time underwater acoustic communication with the surface.

Navigation
Upper Long baseline (LBL) for LBL navigation.

Lifting Bail

Recovery Strobe Light

GPS/Iridium/Wi-Fi Antenna
Provides robust communications options when vehicle is on surface.

Recovery Float and Pop Off Float

Nose Section
Ascent weight, recovery bail and float and release mechanisms.

Control Section
Containing main propulsion, pitch, yaw actuators and electronics.

Electronic Still Camera (ESC) or Sub-Bottom Profiler (SBP) (Optional)

Conductivity, Temperature and Depth Sensor

Operation Speed
Programmable to operate at speeds of up to 5 knots.

Navigation
Lower Long baseline (LBL) for LBL navigation.

GRAPHICAL USER INTERFACE
The REMUS 6000 utilizes essentially the same graphical user interface (GUI) as our proven REMUS 100 AUV. This highly intuitive GUI greatly simplifies vehicle maintenance, mission planning, vehicle checkout, and data analysis; and will run on any PC or laptop operating under Windows® 95, 98, NT, 2000, or XP. Communication between the vehicle and the host is conducted via a standard Ethernet connection. Among other features, the GUI includes:

- An integrated text editor for construction of the mission file.
- A map view that illustrates the planned mission for review.
- Automatic error checking performed on all aspects of the planned mission, with warning messages that appear if any mission parameters are incorrect.
- A set of quick-look indicators display system status, where green indicates OK, and red indicates a fault.



Side Scan Sonar
Single or dual frequency side scan sonar.

Electronics/Batteries
Electronics and 2 rechargeable lithium ion battery packs provide up to 22 hours of operation.

Camera Strobe Light
Camera strobe light and reflector (optional).

Foam Block
Fiberglass coated syntactic foam.

Acoustic Doppler Current Profiler (ADCP)/Inertial Navigation Unit (INU)
Provides combined precision navigation and current profiling capability.



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