



REMUS 100

Autonomous Underwater Vehicle

Compact

Reliable

Lightweight

Modular

**100 Meter
Depth Rating**



HYDROID

REMUS 100

FEATURES

COMPACT SIZE & WEIGHT: The compact size of the REMUS 100 allows for economical overnight shipping and one-man deployment and operation capability. The REMUS 100 also eliminates the need for larger vessels and costly special handling equipment.

PROVEN RELIABILITY: With a track record second to none, the REMUS 100 is the only compact AUV to be selected by the U.S. Navy Fleet for their mine counter measure operations. The system boasts over five years of continuous product development and thousands of hours of field operations.

EASE OF OPERATION: An intuitive Vehicle Interface Program (VIP) allows anyone to become an AUV operator with just a few hours of training.

POWERFUL & VERSATILE: The REMUS 100 contains a full suite of standard sensors, with new sensors being integrated on a continuous basis.

APPLICATIONS

- Hydrographic Surveys
- Mine Counter Measure Operations
- Harbor Security Operations
- Environmental Monitoring
- Debris Field Mapping
- Search and Salvage Operations
- Fishery Operations
- Scientific Sampling and Mapping

SENSORS & PAYLOAD

The capabilities of the REMUS 100 make it ideally suitable for scientific, commercial and/or military operations. The vehicle is small enough to be carried by two people, yet contains enough sophisticated sensor, navigation, and power resources to enable it to perform intricate sonar and oceanographic surveys over large areas.

STANDARD SENSORS

- Acoustic Doppler Current Profiling (ADCP)
- Navigation - Long Baseline Navigation (LBL) and Dead Reckoning Accuracies
- Sidescan Sonar
- Conductivity and Temperature
- Depth
- Bathymetry
- Heading, Roll and Pitch
- Sound Speed
- Mission Progress
- System Status
- Multi-Vehicle Capability

OPTIONAL SENSORS

Available on all new systems and as upgrades on existing fielded systems.

Environmental

- ECO Sensors
- Conductivity, Temperature & Depth
- Oxygen Optode
- pH
- ORP

Communications

- Acoustic Communications
- Iridium
- WiFi
- Gateway Buoy

Imaging

- Dual Frequency Sidescan Sonar
- DIDSON
- Video Camera

Navigation

- Global Positioning System (GPS)
- Digital Ultra Short Baseline (DUSBL)
- Inertial Navigation System (INS)

Software

- Trackpoint Capability
- CADCAC
- Adaptive Mission Profiler
- Multi Vehicle Operations

SPECIFICATIONS

Vehicle Diameter	19 cm (7.5 in)
Vehicle Length	From 160 cm (63 in)
Weight in Air	From 37 kg (<80 lbs)
Trim Weight	1 kg (2.2 lbs)
Maximum Operating Depth	100 meters (328 ft). Can be configured to go to 120 meters (400 ft).
Energy	1 kw-hr internally rechargeable Lithium ion
Endurance	22 hours at optimum speed of 1.5 m/s (3 knots) >8 hours at 2.6 m/s (5 knots). Dependant on speed and sensor configuration, operating environment and mission program.
Propulsion	Direct dive DC brushless motor to open 3-bladed propeller.
Velocity Range	Up to 2.6 m/s (5 knots) variable over range. Dependant on sensor configuration.
External Hook-up	2-pin combined Ethernet, vehicle power and battery charging; 4-pin serial connector
Navigation	Long baseline; Doppler-assisted dead reckoning; Inertial navigation system; GPS
Transponders	4 transponders are provided 20–30 kHz operating frequency range.
Tracking	Emergency transponder, mission abort, and in-mission tracking capabilities.
Software	VIP-based laptop interface for programming, training, post-mission analysis, documentation, maintenance, and troubleshooting.
Data Exporting & Reporting	HTML report generator, and ASCII text export
Operations	Capable of operating 4 vehicles simultaneously in the same water space.



THE ANATOMY OF

Sidescan Sonar

Sidescan sonar designed specifically for the demanding AUV environment. The compact, light weight design incorporates the same proven technology found in traditional towed configurations.

Chemical Light Bracket

For night time operation.

REMUS 100 Vehicle

100 Meter Depth Rating.

Operation Speed

Programmable to operate at speeds up to 5 knots.

Magnetic On/Off Switch

Power/Data Interface Module

This module serves as an external power supply to recharge the Li-Ion batteries and to preserve the batteries when conducting on shore testing. It also provides a high-speed communications link to the vehicle, allowing data to be downloaded to one or more computers. This module has been recently upgraded to aid in battery discharge and conditioning.

Towfish

Portable low-drag transducer transmits and receives wideband signals from the vehicle and transponders to the Ranger unit.

Ruggedized Laptop Computer

Includes intuitive graphical user interface designed for simple pre-launch checkout, mission planning, and data reporting.

The laptop provided with the system may not be the one shown in the above image and is subject to substitution depending on availability.

AUTONOMY

Navigation Transponders

Four small, lightweight transponders are supplied as reference beacons for the vehicle during operation.

The transponders are preset to listen for a specific signal, which is transmitted by the vehicle, and then immediately reply. The vehicle may then easily compute the slant range to the transponder.

Acoustic Doppler Current Profiler (ADCP)/Doppler Velocity Log (DVL)

The specially designed Teledyne RD Instruments ADCP/DVL can be configured to include both downward and upward looking transducers, allowing for bi-directional current profiling, 3-D bottom track, altitude measurement and highly accurate dead reckoning navigation input. The altitude measurement, when coupled with the vehicle's position and depth, also provides seafloor bathymetry.

Conductivity & Temperature

The vehicle is equipped with a multi-parameter sensor sonde, which includes temperature and conductivity. Temperature information is stored in the REMUS 100's hard drive for plotting a profile of the water temperature in the search area. Conductivity and temperature inputs are used to accurately determine the speed of sound in water, which is used to increase navigational accuracy.

Navigation

The REMUS 100 navigates during a mission using Long Baseline (LBL) and Dead Reckoning (DR). The on-board computer automatically determines the preferred method, and can vary it through the mission.

REMUS Ranger

The REMUS 100 vehicle carries an emergency transponder, completely independent of the vehicle's other systems that may be interrogated at any time. The Ranger is a small, waterproof deck unit, designed to give the operator the ability to monitor the vehicle's progress, via its transponder while the mission is underway. The Ranger consists of a highly portable deck unit connected to a small, towed transducer. The front panel display indicates the real-time range to the vehicle in meters and/or is used to send selected commands such as "abort mission" or "come home" to the vehicle during operation.



HYDROID

» REMUS 100



After years of development at the Woods Hole Oceanographic Institution (WHOI), the world's most powerful, compact AUV is commercially available only through Hydroid, LLC. REMUS (Remote Environmental Measuring UnitS) is the culmination of years of leading edge research and development, combined with a proven track record for highly reliable and repeatable field operations.

Hydroid, LLC was founded in 2001 by the inventors of REMUS to allow REMUS technology to reach a wider market and to provide for continuous product development. Hydroid has realized rapid growth and in support of this growth has opened a European office to service an ever increasing international market. This team is enhanced by the organization's growing representative network, which provides local sales and support at a global level.

Hydroid is located in a 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, and ancillary system components and supporting equipment. 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.

