

Solar Powered Autonomous Underwater Vehicle

Long-Endurance AUV

The SAUV II is a solar-powered autonomous vehicle capable of operating on the surface or at water depths up to 500 meters. The vehicle is equipped with rechargeable lithium ion batteries to allow maximum mission endurance even under conditions where minimal solar radiation is available.

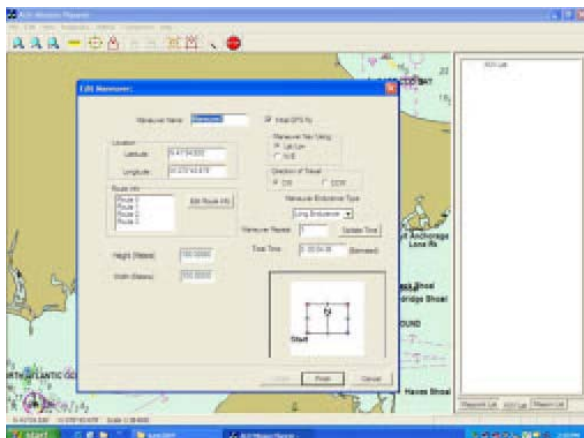
A single-vector thruster provides three-dimensional position and altitude control without the need for additional thrusters or active movable surfaces. The efficient propulsion system/controller allows through-water speeds up to two knots. Surface speed depends on ambient sea conditions.

The SAUV II comes with an acoustic altimeter and pressure sensor for depth and height off bottom control. GPS is provided for control of position while on the surface. Underwater position is maintained by dead reckoning or with use of custom-supplied gyro or Doppler instrumentation.

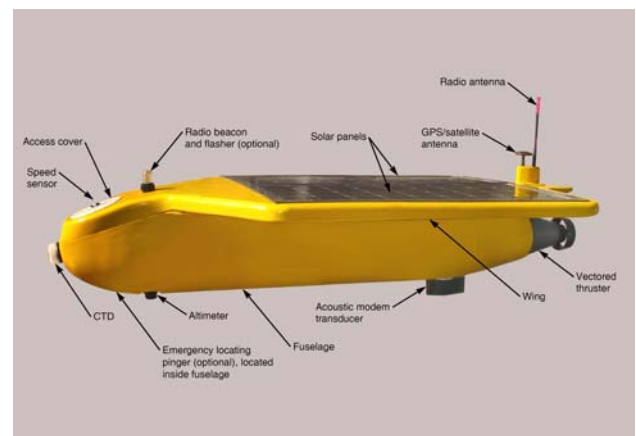
Bi-directional vehicle program control and real-time data acquisition are accomplished through integrated RF communication or via optional satellite link or acoustic modems. In operation, an easy-to-use intuitive Windows®-based operator interface allows mission program downloading prior to deployment and data uploading following vehicle recovery at the end of mission. These functions can also be accomplished in real-time during the mission via the bi-directional communications system.

FEATURES

- Solar power allows extended mission endurance
- Easy deployment and recovery
- Real-time command, control, and data recovery through RF, satellite, and acoustic communications
- Space and power available for a wide variety of science payloads
- GUI provides intuitive, easy-to-use operator interface
- Durable composite vehicle construction

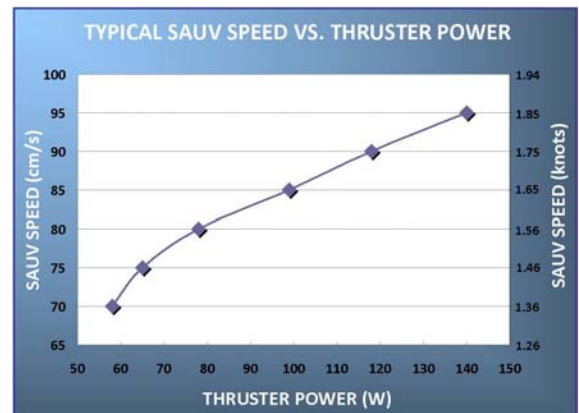


Intuitive Windows® Based Mission Manager



SPECIFICATIONS

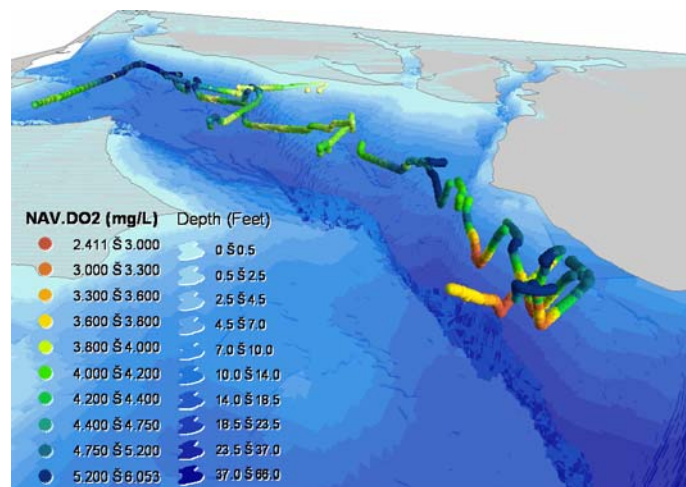
Depth Capability:	500 meters
Solar Array Size:	1.0 m ²
Power/Directional Control:	Vectored Thruster
Operating Speed:	1 to 2 knots, depending on mission parameters
Construction:	Fiberglass Composite
GUI:	Windows®-based intuitive operating system
Communications:	Freewave RF (standard) Acoustic modem (optional - export license required) Iridium satellite (optional)
Optional Emergency Relocation Systems Available:	Underwater Relocation Pinger, Flasher, VHF
Dimensions:	2.3 m L x 1.1 m W x 0.5 m H
Weight:	In Air: 200 kg In Water: 1 kg (positive) Trimmable for custom payloads
Digital Control:	PC-104 based controller
Battery Type:	Lithium Ion
Standard Battery Capacity:	2 KWHr
Stand-by Energy Use:	10 W
Thruster Energy Use:	58 to 140 W maximum
Average Battery Charge Rate:	400 to 700 WHr/Day (Full sunlight, Middle latitudes) <i>Specifications Subject to Change without Notice</i>



Data in near-still water conditions. September 2008

APPLICATIONS

- Coastal and harbor long-term security surveillance
- Communications gateway to provide interface with underwater instrumentation
- Long-term oceanographic monitoring/profiling to depths up to 500 meters
- Long-term reservoir water quality monitoring when equipped with appropriate sensors
- High-density data formats enable analytical visualization of complex phenomena (see below)
- Loiter and respond



Data visualization by J. Frederickson (SAIC) produced using ArcGIS 9.0 suite including spatial analyst and 3D

Analyst Data collected during a dissolved oxygen survey in Greenwich Bay, RI, 8 September 2004

August 2009 Rev 1

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