

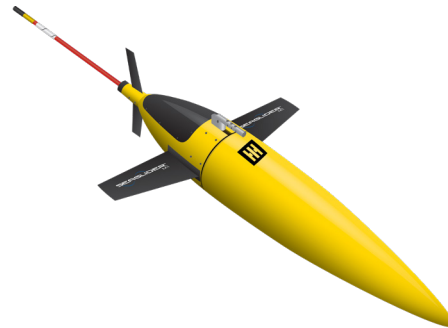
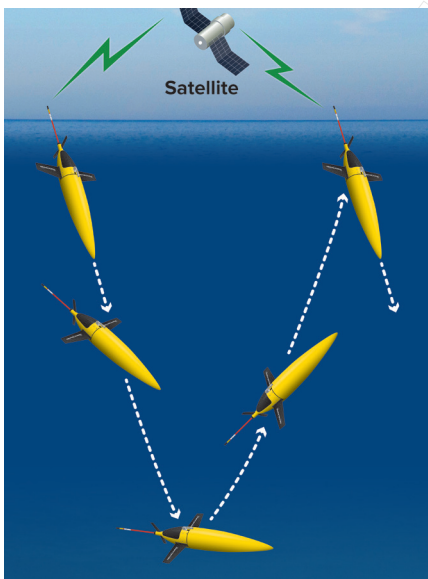
SEAGLIDER™ M1

Autonomous Underwater Vehicle



Key Features

- Two-man portable
- 1,000-meter depth rated
- 9+ months of endurance
- Multiple payload options
- No external moving parts
- Robust and reliable
- Rapidly deployable
- Data received in near real-time via satellite telemetry



The Seaglider® M1 is a long-endurance autonomous underwater vehicle (AUV) that uses changes in buoyancy to move through the water column in a saw-tooth pattern while collecting high-resolution temporal and spatial data.

Climate Research

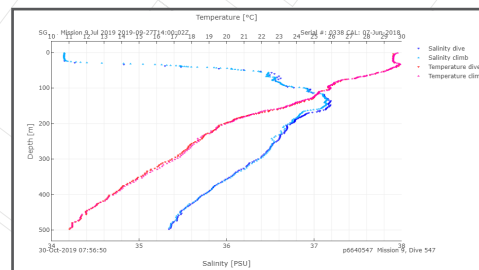
The Seaglider allows for measurement and calculation of factors like salinity and temperature, which aid in climate change studies. Because they are untethered, Seagliders can access remote or hazardous locations and have been used everywhere from the Caribbean Sea, monitoring hurricanes, to polar ice regions, investigating the thinning of ice shelves.

Defense

The Seaglider's robust design and reliable performance assure the repeatable outcomes required for defense missions. Without the need for a propeller or external moving parts, the vehicle is extremely quiet and suited to support long-duration, clandestine defense operations, including intelligence, surveillance and reconnaissance (ISR), anti-submarine warfare (ASW) and physical oceanography model refinement.

Marine Research

The study of marine life can be aided by Seagliders, which are used by researchers around the world to collect data needed to better understand marine processes. Measurements of dissolved oxygen, salinity and temperature give insight into water quality and the health of the ecosystem. Seagliders can also be outfitted with an echosounder for biomass measurements and passive acoustic sensors for marine mammal monitoring.



Underwater glider data provided by The National Oceanic and Atmospheric Administration (NOAA) Atlantic Oceanographic and Meteorological Laboratory (AOML) as part of the NOAA-funded "Sustained and Targeted Ocean Observations for Improving Tropical Cyclone Intensity and Hurricane Seasonal Forecasts" Project.

Other Applications

Given the stability and versatility of the Seaglider M1, there are numerous applications possible. Other common applications include:

- Academic Research
- Offshore Oil and Gas
- Environmental Monitoring
- Physical, Chemical and Biological Oceanography
- Aquaculture
- Fisheries Research



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Approved for Public Release

Specifications

Standard Specifications, Sensors and Payloads	
Depth Rating	1000m (3280 ft.)
Diameter	30cm (11.8 in.)
Length	Body: 2m (6.6 ft.); Antenna: 0.5m or 1m (1.64 ft. or 3.28 ft.)
Weight	50–55kg (110–121 lb.)
Speed	0–0.75 knots
Estimated Endurance*	9+ months
Energy Storage	5.25 kWh Lithium-ion primary batteries
Maximum Range*	5,400+ km
Propulsion and Control	Variable buoyancy system controls ascent/descent; Mass shifter device controls pitch and roll
Communications	Iridium satellite telemetry provides near real-time data when vehicle surfaces
Navigation	Garmin commercial GPS; Dead reckoning with 3-axis compass
Other Sensors	Kistler model 4260 pressure sensor, 0–1500 psi
Data Storage	4 GB SD card
Warranty	Standard one year warranty; Warranty options available
Software	Base station Software: Ubuntu Linux; Basic Piloting Tools: compiled MatLab executable; SeaFleet Cloud-based GUI (optional)
External Connections	RS-232 test and configuration interface, Coax connector for supplied GPS/Iridium antenna, Multiple RS-232 sensor connections
Tracking	In-mission tracking via Iridium communications link; Re-direct and abort commands
Safety Features	Internal pressure and humidity sensors; Configurable aborts based on performance; Over current and low voltage detection; Altimeter to prevent bottom collision; ARGOS Emergency locator beacon (optional)
Operations	Capable of operating multiple Seaglidors simultaneously
Auxiliary Equipment	Collapsible launch and recovery cradle, Operations and maintenance spares, Rugged transit case

Configuration Options	Temperature/ Salinity	Oceanographic	Acoustic	Turbulence
CTD - Seabird CT Sail, Seabird GPCTD or RBR Legato CTD	Standard	Standard	Standard	Standard
Oxygen Sensor - Aanderaa Optode, JFE Rinko ARO-FT Optode or Seabird 43F	Optional	Standard	Optional	Optional
Fluorometer/Backscatter Sensor - Sea-Bird Scientific ECO Puck, SeaOWL or FLNTU	Optional	Standard	Optional	Optional
Passive Acoustic Monitoring - Jasco AMAR-G4 or Jasco Observer	N/A	N/A	Standard	N/A
Turbulence Sensor - Rockland Scientific MicroPod	N/A	N/A	N/A	Standard
Photosynthetic Light - Sea-Bird Scientific PAR	Optional	Optional	N/A	N/A
Current Profiler - Nortek AD2CP	Optional	Optional	N/A	N/A
Echo Sounder - Imagenix ES 853	Optional	Optional	N/A	N/A

*At 0.5 kt; dependent on depth of operation, active payloads and environmental conditions

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