SEA EXPLORER Underwater Glider

Application Fields

Oceanography & Science: Environmental Research & Monitoring
Oil & Gas: Exploration & Environmental Baseline Studies
Defense & Security: Acoustic Monitoring & Patrolling

Key Features

Large-scale (thousands of km) & enduring (weeks to months) observing system, covering the entire water column
Autonomous vehicle & near real-time data transmission: onshore piloting using satellite telemetry
Very cost-effective data collection device: easy to operate, no surface supervising boat required

Key Benefits

Economical & Low-Logistics:
- Rechargeable Battery = Substantial [Budget + Time] savings
  (No energy pack replacement / No vehicle opening / No re-ballasting)
- Interchangeable payload sections

Enhanced Performances:
- Large ballasting volume: high speed & maneuverability
- Large payload sections
- Shallow and deepwater operations

Reliability:
- Low leakage risk: glider rarely opened (rechargeable battery) & internal actuators (no external moving parts)
- Wingless design: no break, nor entanglement

General Principle

The SEA EXPLORER is a powerful autonomous sensing platform dedicated to collecting water column data profiles with very large spatio-temporal coverage (from regional to local scale).

Driven by changes in buoyancy, the vehicle silently glides without wings, facilitating launch & recovery operations, avoiding wing breaks and limiting risks of entanglements (plastic debris, seaweed, fishing nets…).

The modular design allows fast & easy change of the payload by just replacing the vehicle nose section. The payload bay offers large volumes in wet and hyperbaric sections.

An integrated hardware/software suite allows constant supervision & mission control from any place in the world by using a server 24/7 available for vehicles calls. When the SEA EXPLORER surfaces, it sends ashore its GPS position, collected data and receives new mission commands via Iridium telemetry.
Specifications

Body size: (DxL): 0.25 m x 2 m
+ 0.7 m foldable antenna

Wingspan: 56.5 cm. Wingless for extended survivability

Weight: 59 kg in air

Ballast volume: 1 L (+/-500ml)

Speed: Up to 1 knot horizontal

Payload: 9 L / 8 kg in two sections (wet/dry)

Architecture: 2 separated low-power CPUs for payload & navigation

Embedded software: Payload: Opensource C++ / Linux Navigation: Proprietary

Depth rating: 700 m (850 m survival)

Pitch in navigation: +/- 15 to 40° (+/- 20° typical)

Turn radius: 20 m (allows virtual mooring)

Battery: Rechargeable Li-ion

Battery endurance: Up to 2 months with self-logging GPCTD

Recharging time: 20 hours

Communications: Triple antenna with flashing strobe light
GPS / Satellite (Iridium) / Radiofrequency

Local Radio range: 1km @ 902 to 928 MHz (Subject to ship antenna and sea conditions)

Data format: Compressed CSV (native)

Data downloading: Ethernet cable through external connector

Safety: Autonomous Drop-weight
Option: Locator Pinger (ULB) and/or Argos

Sensors: 4 “puck type” ports available
CTD (Sea-Bird)
DO (Sea-Bird)
Chlorophyll (WetLabs)
CDOM (WetLabs)
Turbidity (WetLabs)

Optional sensors:
Hydrocarbon (ALSEAMAR)
Methane (Franatech)
Sewage & Pesticides (ALSEAMAR)
Acoustic Recorder (ALSEAMAR)
Altimeter
Others upon request