

EXPLORER AUTONOMOUS UNDERWATER VEHICLE (AUV)



Photo Courtesy of Bremen University

In 2001, ISE began development of a modular AUV known as Explorer. This design is based on the successful ARCS and Theseus AUVs, with combined 22 years operating life. The first of the Explorer class vehicles was delivered to the French research agency, IFREMER, in February 2004. In 2004, vehicles were also ordered by the University of Southern Mississippi and the Memorial University of Newfoundland. In 2005, IFREMER ordered a 2nd vehicle and the University of Bremen placed an order for a 5000 m Explorer AUV in March 2006. The experience in the marine science setting has been excellent with good availability and low operating costs. Recently, two 5000 m Explorer class AUVs have been ordered by NRCan (Natural Resources Canada) for delivery in summer 2009.

The modularity of the ISE Explorer AUV is optimized for longevity and adaptation to new requirements. The cylindrical pressure hull and the wet payload sections are modular and can be lengthened or shortened. Equipment bays in the dry, aluminum pressure hull can accept 19" racks without repackaging. The 69 cm diameter wet payload bays can accommodate a wide range of side scan sonars, multibeam echo sounders as well as the range of water column instrumentation needed. Access to vehicle control software is provided to allow the user to integrate new equipment. Recorded data is offloaded through a high speed Ethernet port connection on the hull. A separate port connection is provided for charging.

Principle Characteristics:

Length	4.5 m to 6.0 m
Hull Diameter	0.69 m (3000 m) – 0.74 m (5000 m)
Dry Weight	750 to 1250 kg
Working Range	120 km at 1.5 m/s with 75-Watt payload Range can be increased to 240 km with 2 nd battery bank and 360 km with 3 rd
Maximum Depth	300, 1000, 3000 or 5000 meters
Speed Range	0.5 to 2.5 meters per second
Power Source	1.6 kWh Lithium Ion battery modules
Control Computer	Rack mount compactPCI system
Hydroplanes	3 planes - 2 foreplanes optional
Navigation	IxSea Fibre-Optic or Kearfott Ring Laser Gyro INU
Velocity Sensor	Teledyne RDI Workhorse 300 or 600 kHz DVL
Positioning	Motorola GPS antenna USBL transponder
Depth Sensor	Paroscientific Digiquartz transducer
Altitude Sensor	Kongsberg Meso 675 kHz Digital Altimeter
Acoustic Communications	ORCA MATS 200 or LinkQuest UMW4000
Radio Telemetry	900 OR 2400 MHz radio, Iridium satellite communications
Payload Capacity	Without removing trim lead – 200 kg
Emergency Equipment	ORE LXT Transponder, Novatech Strobe, Novatech RF Radio Beacon, drop-weight



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