AQUA2™

Independent Robotics Inc.

AQUA2 is an autonomous underwater vehicle (AUV) that uses six independently controlled fins to provide a highly maneuverable underwater sensor platform.

- Deploy the robot without the requirement of support vessels.

- The robot has been tested to a depth of 120′, and has an intended operating range from the shoreline to 100′.

- Collect data from data from onboard cameras and inertial and environmental sensors, from the surf zone to the open ocean.

- Tele-operate AQUA2 from the convenience of the shore, have it operate autonomously, or with a scuba diver.

- The vehicle and its support gear fit in two standard shipping cases that can be carried as standard luggage by commercial airliners.

- AQUA2′s unique technologies are covered by multiple patents.

HIGHLY MANEUVERABLE
The AQUA2 vehicle uses six independently controlled fins to propel itself through the underwater environment. This arrangement of highly compliant thrusting surfaces results in a highly maneuverable vehicle that unlike traditional thruster designs poses no danger to humans or sea life and can land or take-off with minimal impact.

LIGHTWEIGHT AND PORTABLE
The AQUA2 vehicle is extremely lightweight and portable. It can be deployed easily from two standard sized shipping containers that can be transported by commercial aircraft carriers as regular luggage[1]. The vehicle requires no external support vessel for either deployment or operation.

AN IDEAL RESEARCH AND SENSING PLATFORM
Equipped with cameras mounted fore and aft, and other inertial and environmental sensors, the AQUA2 is specifically designed as a research and sensing platform. AQUA2 has found a wide range of research applications including reef monitoring and aquaculture inspection.

[1] AQUA2′s Lithium-ion battery packs travel in carry-on luggage.

AQUA2

The vast majority of underwater aquatic vehicles require significant shore support and deployment equipment. In contrast the AQUA2 vehicle -- the result of ongoing research efforts in intelligent underwater vehicles -- fits in two standard shipping containers and can be deployed by hand. Suitable for operation to depths of up to 100′ and visually guided, the AQUA2 vehicle is the ideal sensor platform for a wide range of tasks in environmental inspection and reclamation, aquaculture, and national defense. Capable of being operated in a tele-operational mode using an Ethernet connection, the AQUA2 vehicle can also operate autonomously using its onboard vision and inertial sensors. The vehicle is available in a wide range of configurations to meet individual researcher and industrial requirements.

VEHICLE COMPONENTS, OPTIONS AND SPECIFICATIONS

AQUA2 BODY - Six legged amphibious robot rated for operation to 100′. This includes an onboard control computer and motor controller components including gait generation software.

AQUA2 VISION SYSTEM - Second onboard PC104+ processor and software suitable for image and video acquisition and computationally intensive vision tasks including onboard stereo and visual target localization. The vision subsystem is based on the Linux operating system.

AQUA2 FRONT AND REAR CAMERA MODULES – One or two front or rear mounted digital cameras suitable for navigation, data acquisition or stereo reconstruction of the local environment.

AQUA2 BATTERY PACK - Quick replace battery pack for the vehicle. Note that the vehicle normally requires two battery packs for operation and provide roughly 5 hours of operational time.

AQUA2 BATTERY RECHARGER - A Mil-Spec quick recharger for the onboard batteries, lower cost slow chargers also available.

AQUA2 OPERATOR CONTROL UNIT (OCU) - A self-contained operator control unit that allows the vehicle to be operated using an optical fiber tether.

AQUA2 OPTICAL TETHER SYSTEM- Communicate with the vehicle via Ethernet transmitted over fibre optic tether. The tether allows the vehicle to be networked with other devices including the OCU above, various lengths available.

AQUA2 WIRELESS ETHERNET - A wireless Ethernet (802.11g) option for the vehicle when operated out of the water.

AQUA2 LEG SET - A spare set of legs for the vehicle.

CAMERA TARGETING - Downward facing mirror assemblies.

ADDITIONAL OPTIONS – Software autopilot system. Image storage and manipulation. Armored and lightweight tethers. Rugged laptop with operator control interface. Specialized leg sets for different terrains. Remote video storage unit. Fiber-optic Ethernet router and hub.

Further information including a detailed product list, pricing and service contracts can be obtained from:

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