

ULTRA-1 USV

Marine Asset Survey and Inspection Craft

Ultra-1 Unmanned Surface Vehicle (USV) is a modular easily deployable dynamically positioned survey craft based around a conventional small inflatable boat. Electric propulsion pods are powered by a series of onboard batteries configured so as to provide redundancy and power supply for the onboard control, communications and survey sensor systems.

Ultra-1 employs a unique four thruster propulsion arrangement which allows precise control of position, heading and ground speed. This precise control, especially at low speed, allows for very high resolution data acquisition, enabling capture of a full density data set of both the above and below water aspects of a marine asset. Using a precise position hold function Ultra-1 is able to provide detailed visual, acoustic and laser inspections from a static perspective and 3 knots kinematic data acquisition using autonomy mode.



The craft employs a fully automated retractable MBES transducer mount and is fitted with an Applanix POS MV inertial navigation system for highly accurate survey control. It has been deployed with the highest resolution sonars and lasers available, having been mobilised with full size Reson and R2Sonics multibeam systems. Gimbal stabilised 4K stills and video cameras provide a visual record of the asset.

The large payload capacity, for a platform of this size, coupled to the modular and cost effective design, allows an array of off the shelf survey sensors to be mobilised aboard the craft. The optimum combination of survey tools can be deployed without compromising equipment choice due to insufficient payload capacity.

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Technical Specifications

PHYSICAL

Length	1.9m
Beam	1.6m
Draft	0.4m
Weight	60kg
Payload	150kg
Propulsion	4 x 24V motor pods in vectored thrust layout

PERFORMANCE

Top speed	4 knots
Survey speed	0.25m/s high resolution survey
Battery Endurance	6 hours before battery change
Battery type	Li-ion

CONTROL

Operational modes	Manual, position hold, heading hold, aided, follow me, autonomous
Communication	25km range triple redundancy multi-frequency radio link with 4G modem and long range Wi-Fi
Ground control station	Live video feed from on board cameras, status monitoring of all systems, low latency control over on board survey computer and survey systems

EQUIPMENT

Computer	On board high specification ruggedised high storage capacity PC
Sonar	7125,T50, R2Sonics 2024, Norbit
Laser	2G Robotics ULS-500, Leica P Series, Riegl
Acoustic camera	Gimbal stabilised ARIS 3000 for high resolution imaging in turbid water
Visual camera	Gimbal stabilised DSLR 4K camera above water and 4K video camera below water
Other equipment	Side scan sonar, sub-bottom profiler, USBL, ADCP, magnetometer

