

OTTER

UNMANNED SURFACE VEHICLE [USV]

COST EFFECTIVE RISK-REDUCING DATA ACQUISITION





THE UNMANNED FUTURE

The Otter USV:

A cost-effective turn-key solution for bathymetric surveys in sheltered waters.

Maritime Robotics' Otter USV is the ultimate hydrographic survey tool for mapping sheltered and enclosed waters. With tight integration between the on-board control system which enables autonomy and the multi-beam echo sounder, a bathymetric survey can be executed with a simple, streamlined workflow.

The Otter USV is the smallest member of the Maritime Robotics USV family. With a footprint of only 200 x 108 x 81.5cm (78" x 42" x 32"), it fits into any small cargo van for convenient transportation to survey sites. With a weight of 55kg assembled, and with the ability to be disassembled into parts weighing less than 20kg, a single operator can launch the Otter from a jetty, lake- or riverside, or the beach.

The autonomous future is electric: the Otter is equipped with electric thrusters that are powered by up to four powerful and easily interchangeable battery packs. This gives the Otter a best-in-class endurance for its size, operating up to 20 hours at 2kn. The battery solution is built with off-the-

shelf components, providing easy access to spare parts all over the world.

The Otter can be controlled via a graphical user interface: Maritime Robotics' vehicle control station (VCS), or a mobile phone app. The app provides manual joystick-like control, while VCS has several control modes, such as course and speed control, heading control, or waypoint control. For waypoint control, the operator can easily plan missions consisting of individual waypoints, or use templates for creating common patterns such as lawnmower surveys. Furthermore, live monitoring of sensor data quality parameters and visualisation of actual data are provided in VCS, and sensor parameters can be adjusted in VCS as well.

The Otter's robust catamaran design and the tightly integrated bathymetric survey sensors make this system a cost-effective turn-key solution for bathymetric surveys in sheltered waters such as small lakes, canals, rivers, ponds, and harbour areas.



PRODUCT COMPONENTS

01



Vehicle Control Station

02

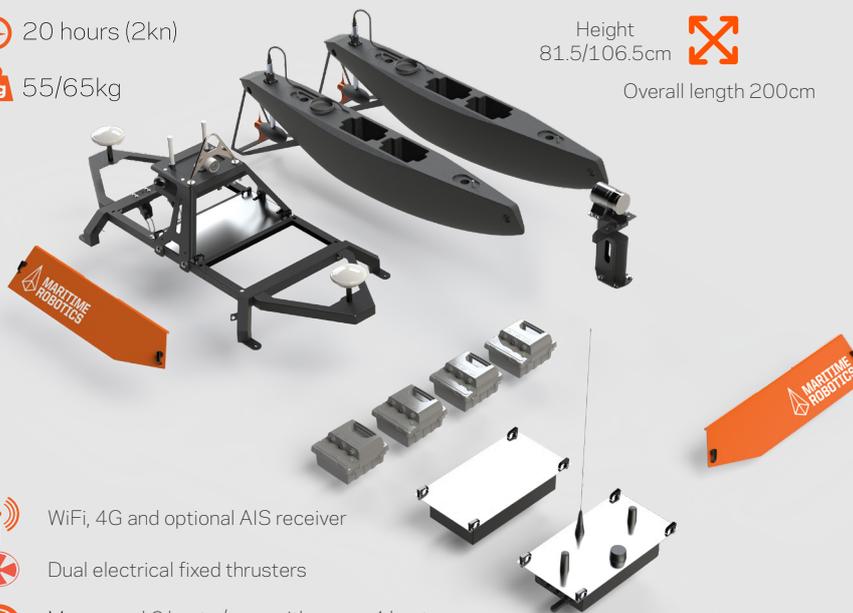
20 hours (2kn)

55/65kg

Width 108cm

Height 81.5/106.5cm

Overall length 200cm



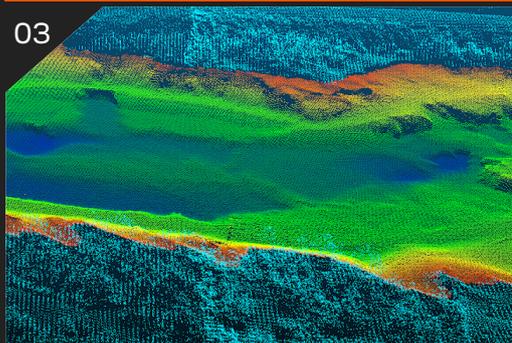
WiFi, 4G and optional AIS receiver

Dual electrical fixed thrusters

Max-speed 6 knots / max with sonar: 4 knots

Specifications

03



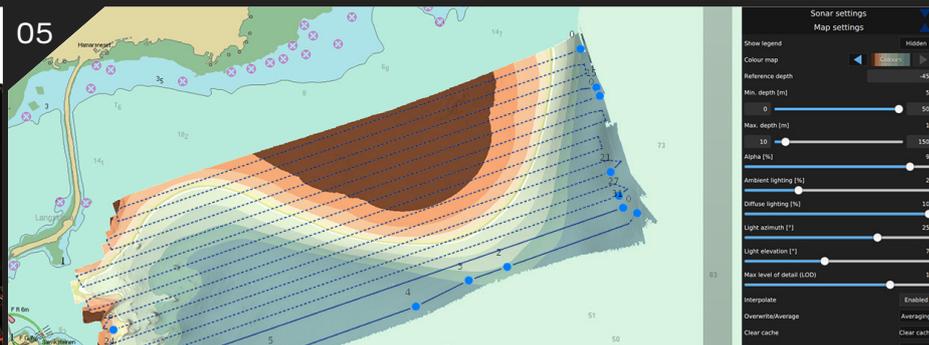
Bathymetric Mapping System

04



Custom Payloads

05



Bathymetry

01 VEHICLE CONTROL STATION

Sensor and payload data can be monitored in the Vehicle Control Station. Multi-beam data, swath width, coverage area, and quality parameters can be displayed in real time on an intuitive user interface.

02 SPECIFICATIONS

20 hours endurance with 2kn, 55kg total weight, WiFi, 4G and optional long range radio link. Dimensions: 200 x 108 x 81.5cm. The Otter can be dismantled into smaller components (hulls, mid section, batteries and payload), such that one person can transport the Otter to the site of interest.

03 BATHYMETRIC MAPPING SYSTEM

Ultra-compact single-beam and multi-beam sonar systems are available for integration for the Otter. This makes the Otter a turn-key solution for bathymetric surveys in sheltered waters.

04 CUSTOM SENSOR INTEGRATION

Sensors such as an ADCP, CTD, fluorometers, and a hyperspectral imager can easily and cost-efficiently be integrated. We also provide an SVP winch.

05 BATHYMETRY

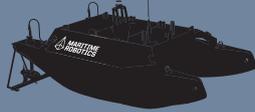
Repetitive tasks, such as bathymetric mapping, are ideal for an automated robotic system. The Otter performs these tasks without the expenses or extensive resources needed for traditional surveys.



OTTER

SPECIFICATIONS

OTTER STANDARD



OTTER PRO



Length x Width x Height	200 x 108 x 81.5cm 78.7" x 42.5" x 32.1"	200 x 108 x 106.5cm 78.7" x 42.5" x 41.9"
Draft	30cm, 12"	
Weight <small>* with 2 batteries</small>	55kg, 121lbs*	65kg, 143lbs*
Hull material	Polyethylene	
Propulsion	2 x geared electric motors	
Endurance <small>* with 80W payload</small>	Up to*: 28 hours @ 1kn 20 hours @ 2kn 9 hours @ 3kn	
Control Station	Lenovo Yoga 13.3" ■ Android app (phone not supplied)	
AIS	Optional	✓
Camera	—	✓
High-bandwidth comms	—	✓
SVP winch	—	Optional

Add Ons	Norbit iWBMS Multibeam family	On-board software for correction services over the NTRIP protocol	Ecotone Underwater Hyperspectral Imager
	Kongsberg EM2040P	Teledyne T20-ASV	Biosonics MX / DT-X
	Kongsberg EK80 Fishery Echosounder	Teledyne ODOM MB2	Knudsen sub-bottom profiler
	AutoCast SVP Winch supporting Valeport Swift SVP, AML Base X2 SVP and AML-3 SVP	R2Sonic Sonic2020	Knudsen single-beam
		PingDSP 3DSS-iDX sonar	UHF modem for RTK corrections from GNSS Base Station

A LEADER IN UNMANNED SOLUTIONS

Maritime Robotics, developer and supplier of the Otter, is a leading provider of innovative unmanned solutions for maritime operations and data acquisition. The company develops and delivers Unmanned Surface Vehicle Systems (USV), Moored Balloon Systems (MBS) as well as Unmanned Aircraft Systems (UAS). Our main markets are geophysical surveying, oil & gas, environmental monitoring, and the defence/security market. With technology developed in close collaboration with civilian, governmental and military partners, Maritime Robotics focuses on delivering high-quality system solutions and products that are cost-effective, reduce HSE risk exposure and are highly deployable, in any conditions.



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