

# OTTER

## UNMANNED SURFACE VEHICLE [USV]

COST-EFFECTIVE AND RISK-REDUCING MARITIME DATA ACQUISITION



ENABLING OCEAN SPACE AUTONOMY



# OTTER

**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 106.5cm (78.7" x 42.5" x 41.9"), it fits into any small cargo van for convenient transportation to survey sites. With a weight of 65kg 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 lawn-mower 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

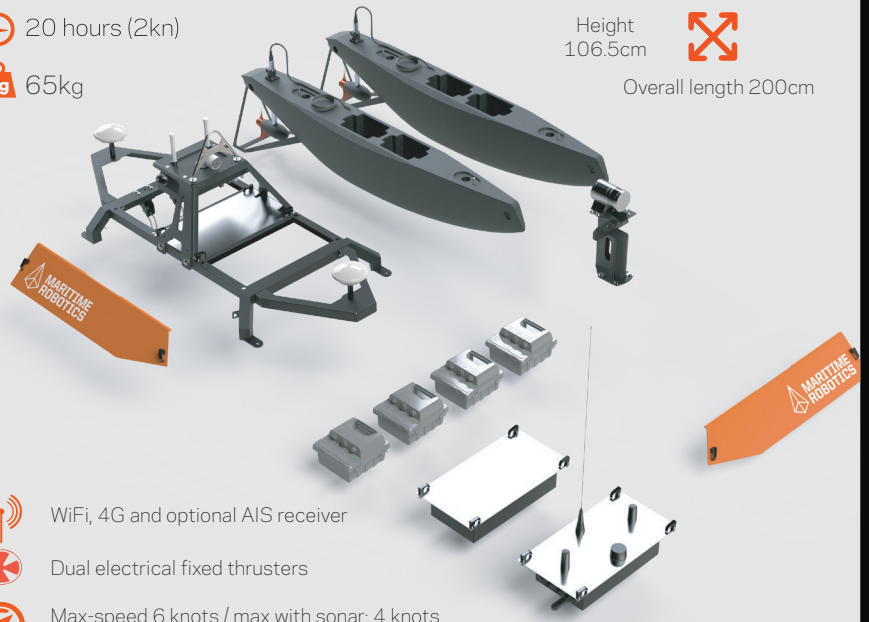


Vehicle Control Station

02

- 20 hours (2kn)
- 65kg

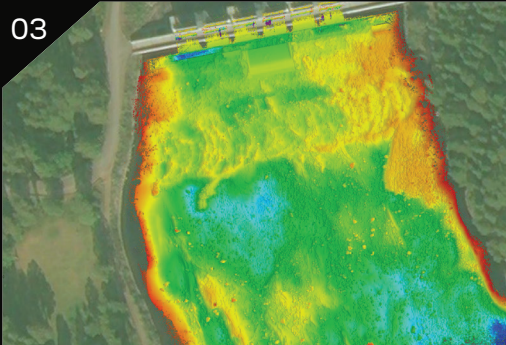
Width 108cm  
Height 106.5cm  
Overall length 200cm



- WiFi, 4G and optional AIS receiver
- Dual electrical fixed thrusters
- Max-speed 6 knots / max with sonar: 4 knots

Specifications

03



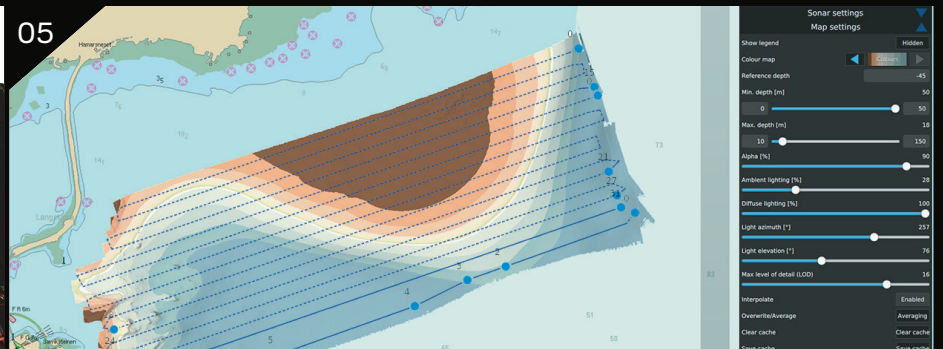
Bathymetric Mapping System

04



Custom Payloads

05



Autonomous Mission Planning

### 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, 65kg total weight, WiFi, 4G and optional long range radio link. Dimensions: 200 x 108 x 106.5cm. 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

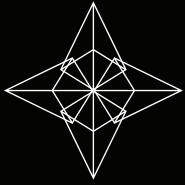
Ultra-compact single-beam and multi-beam sonar systems are available for integration for the Otter. This makes the Otter a turn-key solution for bathymetric surveys in sheltered waters.

### 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 AUTONOMOUS MISSION PLANNING

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. The VCS software enables easy planning of autonomous survey missions, including automatic enabling/disabling of sensors and auto-cast for the SVP winch.



# OTTER PRO



## SPECIFICATIONS

<b>Length x Width x Height</b>	200 cm x 108 cm x 106.5 cm   78.7" x 42.5" x 41.9"
<b>Draft</b>	32 cm   12"
<b>Dry weight</b>	65 kg   143 lbs (with two batteries)
<b>Hull material</b>	Polyethylene
<b>Propulsion</b>	2 x geared electric motors
<b>Endurance</b>	With 80W payload up to: 28 hours @ 1 kn 20 hours @ 2 kn 9 hours @ 3 kn
<b>Control Station</b>	14" rugged laptop / Android app (phone not supplied)
<b>AIS</b>	✓
<b>Camera</b>	✓
<b>High-bandwidth comms</b>	✓
<b>SVP winch</b>	Optional

## INTEGRATIONS

Bathymetric Singlebeam	Environmental Sensors	Aquatic Habitat Echo Sounder
Sub Bottom Profilers	Sidescan Sonar	USBL
Multibeams	LiDAR and Radar	Fisher Echo Sounder
Surveillance Equipment EO/IR Camera Systems	SVP Sensor	On-board software for correction services over the NTRIP protocol
	Underwater Hyperspectral Imager	

### 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 System (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.