SEABER
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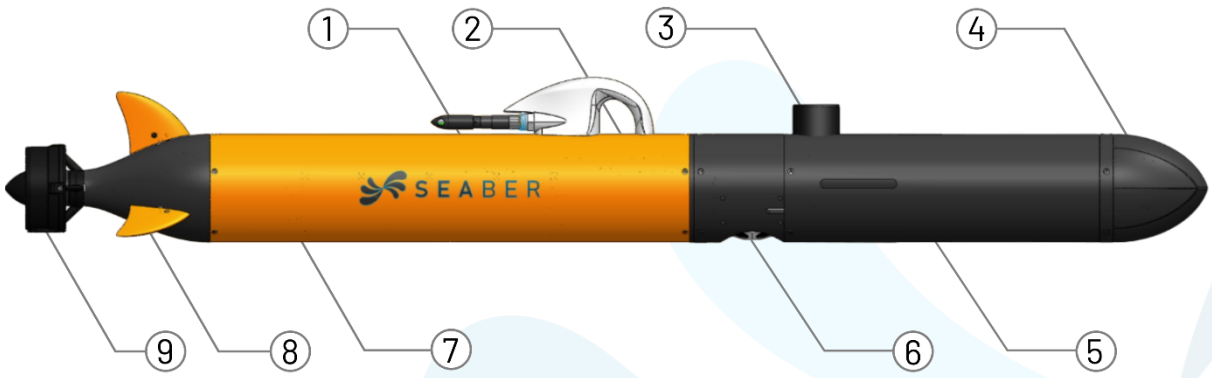
Datasheet

MARVEL-MAGNETO

This document provides further information on the MARVEL-MAGNETO *key features.*

MARVEL-MAGNETO is equipped with a Fluxgate Magnetometer from *Sensys*, detecting magnetic anomalies. It comes with a DVL, to compensate current drift, improve positioning and keep altitude from the sea floor. It is equipped with underwater acoustic positioning and communication module.



1	Start key and charging port	6	DVL (Doppler Velocity Logger)
2	Mast (UHF radio communication, GNSS antenna and status LEDs)	7	Sealed dry body section which contains Lithium-Ion battery and electronics
3	Acoustic positioning and communication module	8	Fins
4	Nose (wet part for buoyancy foam and payloads)	9	Propulsion Thruster
5	Magnetometer		

Technical features

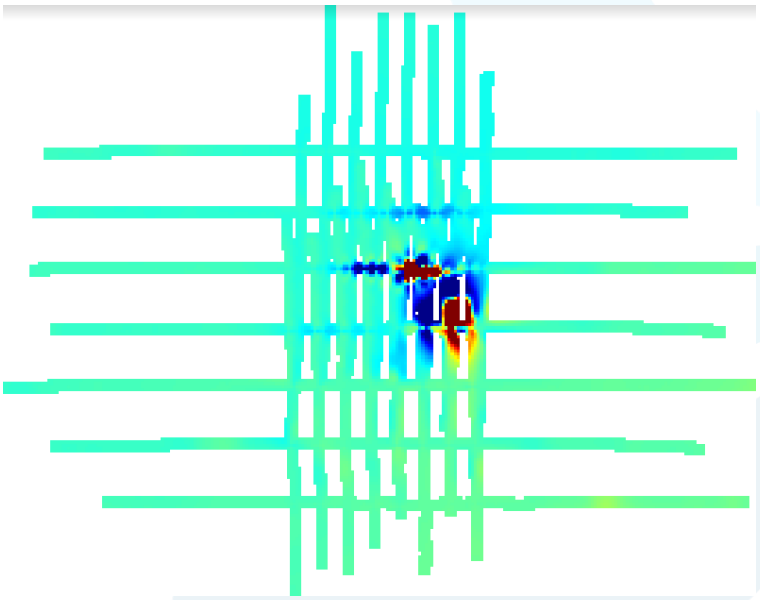
Length	130 cm
Body Diameter	12 cm
Weight in air	11,5 kg
Depth rating	300 m
Speed	2 to 6 knots
Endurance	10 hours @ 3 knots / 6 hours @4 knots (with Li-Ion battery)
Navigation accuracy	<5m absolute positioning within USBL surface module range
Energy	Rechargeable 600Wh/14.8V Li-Ion
Battery Charger	100 to 240 VAC 50 to 60 Hz
Programming interface	SEAPLAN software by SEABER
Surface Communication	LoRa UHF point-to-point communication with SEACOMM device For MARVEL status messages and orders Autonomous buoy with USBL unit and dual antenna GNSS-RTK module
Underwater Communication	Real-time status of the MARVEL with acoustic modem Possibility to send orders to the MARVEL during the mission
Accessories	Rugged transport case Spare parts and tools in waterproof bag

Sensors

DVL	
Model	Waterlinked A50
Frequency	1 MHz
Beam angle	22.5 degrees
Ping rate	4-26 Hz
Max altitude	50 meters
Max velocity	3.75 m/s
Velocity resolution	0.1 mm/s

Magnetometer	
Model	Sensys FGM3D/100
Mesurement range	±100.000nT X, Y, Z magnetic vector @ 100 Hz
Noise	<15pTrms/√Hz @f=1Hz
Resolution	<150 pT
Cut-off frequency	2 kHz (DC...2 kHz)
Linearity	<20 ppm
Comments	Possibility to automatically calibrate the fluxgate sensor during the mission

Acoustic positioning and communication module	
Model	Blueprint SeaTrac
Acoustic Range	1km radius horizontal, 1km vertical (hemispherical)
Range Resolution	±0.1m (dependant on provided VOS accuracy)
Velocity of Sound Range	1300ms-1 to 1700ms-1 (can auto-compute from water temp & depth)
Beacon Velocity	Active Doppler compensation, up to 15kts (28kph)
Communications	Broadband spread spectrum encoding, 24-32kHz, 100 baud. Multi-tiered Acoustic Protocol Stack.



(magnetic map of the shipwreck after calibration)