# Datasheet
MARVEL-SCAN

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

MARVEL-SCAN is equipped with a Side-Scan Sonar from *DeepVision*, producing seabed scan images. 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.
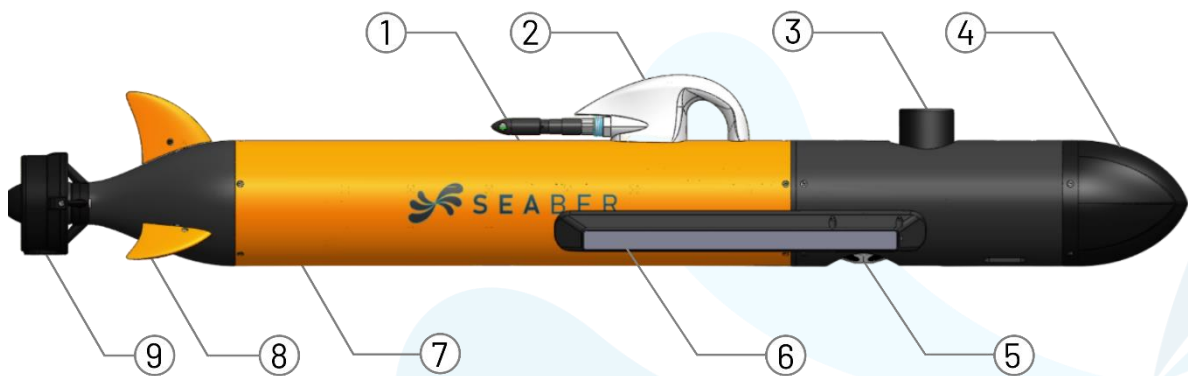
1	Start key and charging port	**6**	Side-scan sonar swappable transducers
2	Mast (UHF radio communication, GNSS antenna and status LEDs)	**7**	Sealed dry body section which contains Lithium-Ion battery and electronics
3	Acoustic positioning and communication module	**8**	Fins
4	Nose (wet part for buoyancy foam and payloads)	**9**	Propulsion Thruster
5	DVL (Doppler Velocity Logger)		

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

Side Scan Sonar	
Model	DeepVision
Frequency	200, 340 or 680 kHz
Range	Up to 50m (680kH), 100m (200 kHz)
Horizontal Beam Width	0.5°
Vertical Beam Width	60°
Output file format	DVS (DeepVision Format) XTF (eXtended Triton Format)

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.
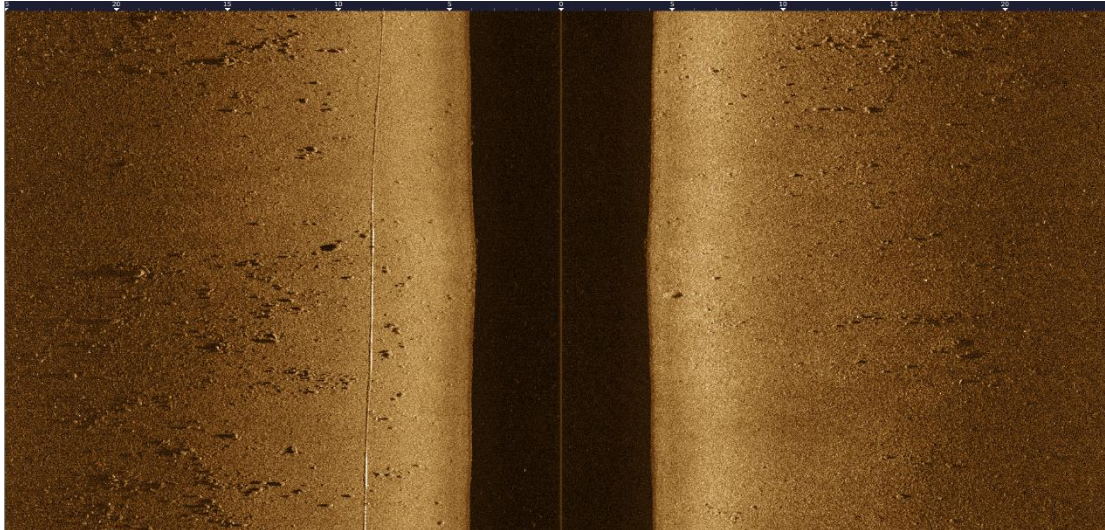
(35mm telecom cable survey)