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Sonobot 5 product information guide - May 2024

EvoLogics

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Evo Logics

SONOBOT 5

AUTONOMOUS HYDROGRAPHIC SURVEY VEHICLE

PRODUCT INFORMATION GUIDE



EVOLOGICS SONOBOT 5: MODULAR DESIGN FOR A WIDE RANGE OF APPLICATIONS

High-precision measurements and recordings

- different GNSS-options available (DGPS with/without RTK, laser tracking over a total station as well)
- sonars: single-beam echosounder, multibeam echosounder, side-scan sonar, front-looking sonar (in variable configurations according to customer needs)
- HD camera for navigation support, photo- and video recordings
- Thermal camera, stereo camera, underwater camera

Flexibility

- Rapid system deployment, excellent maneuverability and area coverage thanks to powerful and efficient drives
- Special system software for planning, execution and evaluation of the survey
- Communication over a redundant mesh network enables work with/without a WLAN station, including integration of additional modules (laser tracking) without any configuration effort

Versatility

- Autonomous and radio controlled operation modes
- Direct Wi-Fi communication with redundant link or GPRS/LTE
- PC for field operations
- Mission planning includes settings for sensor parameters
- Configurable data output
- Housing available in several color options
- AI-based object recognition

Robustness

- Built from robust seawater-resistant materials (carbon fibre, stainless steel, plastic)
- Suitable for operations in industrial waste waters
- On-board data logging, wireless transmissions on demand
- Transport case, suitable for air transport

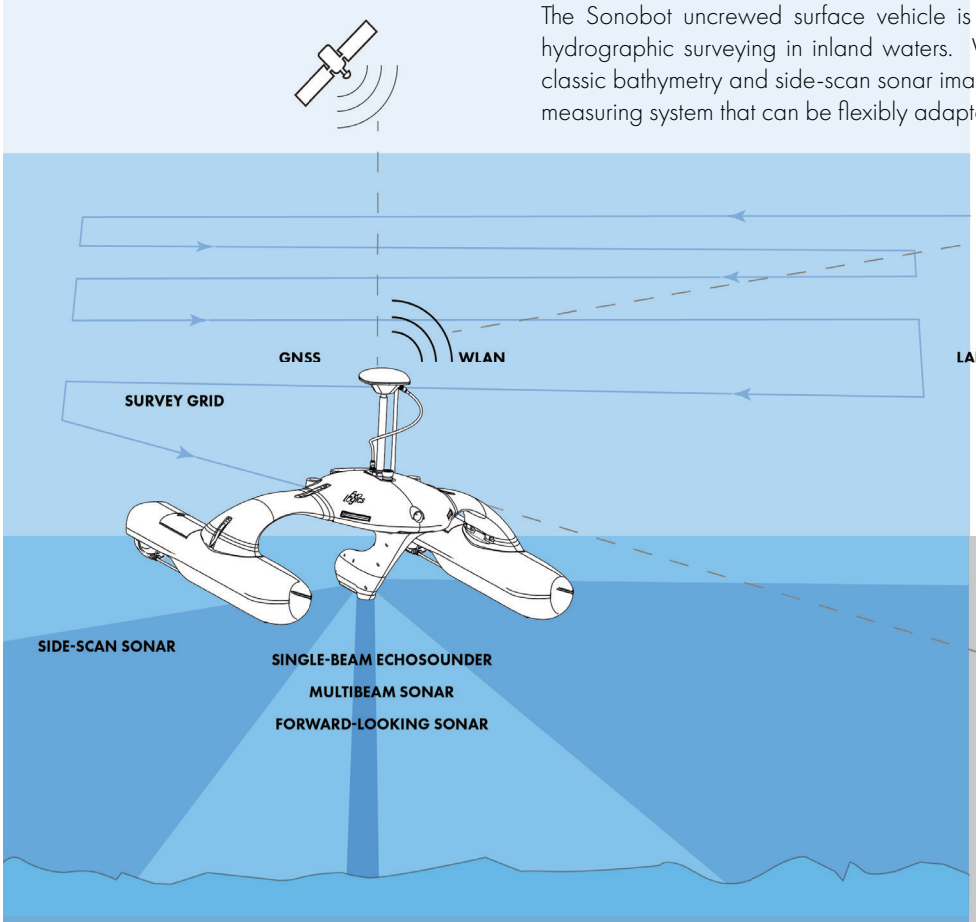
Easy handling

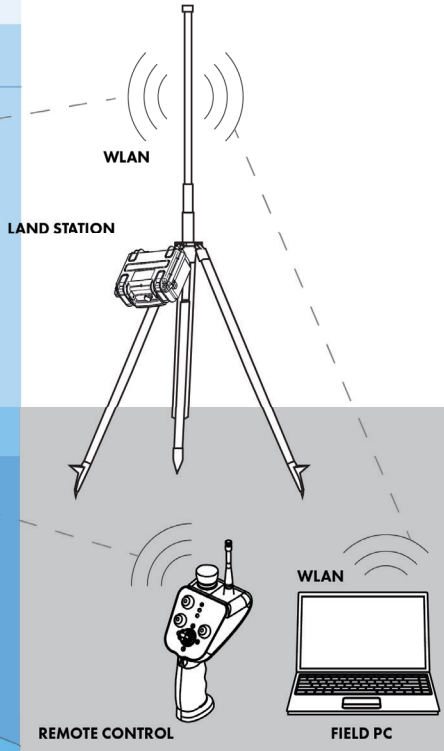
- Assembly completely without tools, can be handled by a single person
- Fits into a car trunk compartment for transport

THE SONOBOT 5 SYSTEM



The Sonobot uncrewed surface vehicle is a system platform, tailored to the needs of hydrographic surveying in inland waters. With highest precision, it carries out both the classic bathymetry and side-scan sonar imaging. The Sonobot is a very light and modular measuring system that can be flexibly adapted to the needs of a particular application.





Autopilot-integrated measuring system and a dedicated software package enable highly effective deployments of the Sonobot system.

The Sonobot is primarily used for 3D mapping, estimations of water body volumes, to determine sediment inputs or displacement of sediments. As an autonomous system, the vehicle can reveal changes in the shipping routes over time. It can be used to detect objects that pose a safety threat to people and infrastructure.

During search operations, objects and people can be located quickly: the vehicle enables targeted recovery work, reducing time and effort for rescue personnel and divers.

Hydrographic surveys

- Bathymetry and seafloor imaging in ports, harbors and inland waters

Search and recovery

- Locating objects, such as archeological artifacts, wrecks, missing persons etc

Survey missions

- Exploring shallow waters, natural reserves, flooded, restricted or hard-to-reach areas

Monitoring

- Regular examinations of underwater infrastructure

Security

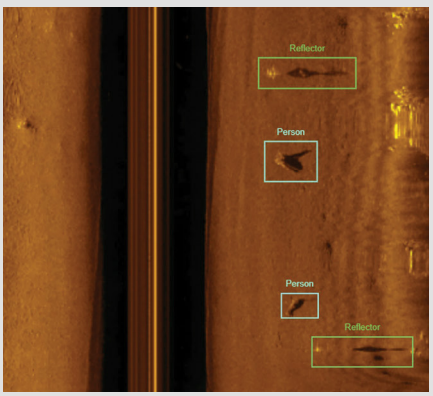
- Special versions for maritime and seaside security missions available upon request

OBJECT RECOGNITION

Object recognition is an advanced feature for EvoLogics Sonobot: the AI-based system is an extra module that runs directly onboard the vehicle and analyses raw side-scan sonar or video camera output.

Objects of interest are detected and visually highlighted in the operator's control software onshore live during the mission.

A cloud-based ecosystem around the new OR system provides users with regular updates and new detectable object classes. It also allows uploading user datasets for the system to be trained for new object types upon request.





SONOBOT 5 WITH MULTIBEAM SONAR

SPECIFICATIONS AND CONFIGURATION OPTIONS

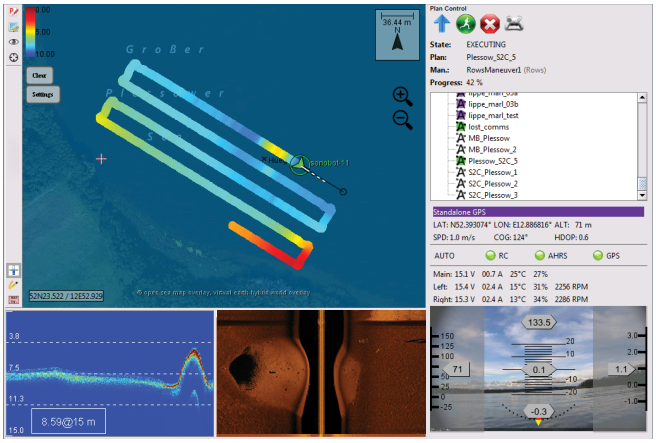
DESIGN AND DIMENSIONS	
VEHICLE TYPE	Catamaran
DIMENSIONS	Height: 805 mm (construction), width: 920 mm, length: 1300 mm
DRAFT	120 mm (propeller over keel line) with weed guard
WEIGHT	< 27 kg, depending on configuration
TRANSPORT	Complete system in one transport case, fold-out no-tools assembly
IP RATING	IP 68 for all system components
SYSTEM COMPONENTS	Sonobot USV, field-PC with software, remote control, WLAN-station with tripod and antenna
OPERATION	
COMMUNICATION	Mesh-network 2,4 GHz WLAN and 868 MHz redundant (915 MHz available) enable permanent control for real-time navigation and measurement data collection
WLAN RANGE	up to 1,5 km (with omnidirectional antenna), up to 2,5 km (with directional antenna), long-range option available
OPERATING RANGE	>30 km at 1 m/s speed in water, depending on configuration
SURVEY SPEED	0.5 to 1,5 m/s, maximum speed 5 m/s , depending on configuration
OPERATING TIME	up to 9 hours with one battery pack, depending on configuration; additional battery packs available
WIND/ WAVES	up to 5 bft without breaking waves
CONTROL	Manual control and map-based navigation, autopilot for autonomous operation
SONARS	
ECHOSOUNDER	EvoLogics broadband single-beam echosounder 200 kHz - standard; 80 kHz and 400 kHz options available
SIDE-SCAN SONARS	EvoLogics 500 kHz with integrated 200 kHz echosounder - standard, other options available
MULTIBEAM ECHOSOUNDER	**EvoLogics Multibeam** (Norbit inside): dual GNSS and INS positioning and motion control, up to 130° swath, 256 beams at 1.45° x 1°, over 200 m range, up to 50 Hz ping rate, compatible with Norbit data collection tools
FORWARD-LOOKING SONAR	700 kHz: up to 25Hz update rate, 256 beams, opening angle 120° x 20°
POSITIONING	
GNSS	1408 channels, frequency bands: GPS L1C/A, L2C, L2P(Y), L5; BDS B1I, B2I, B3I; GLONASS G1, G2; Galileo E1, E5a, E5b; QZSS L1C/A, L2C, L5; SBAS L1C/A, RTK position accuracy: horizontal 0.8cm + 1ppm, vertical: 1.5cm + 1ppm
RTK	Reference service over GSM/LTE or Base/Rover, EGNOS
TOTAL STATION	Mirror reflector and total station for positioning without GNSS optionally available
FIELD-PC/SOFTWARE	
RUGGED LAPTOP	Robust, bright, IP65 and MIL-STD810G rated, with pre-configured software, LTE option available
SOFTWARE	Software and GUI are designed for working with the Sonobot and are also available without a PC
CAMERA	
FRONT-VIEW CAMERA	Fully integrated HDTV network camera with data storage for photo- and video recordings. Underwater camera option available
STEREO CAMERA	1920x1200, max. 60 FPS, color sensor AR0234, DFOV 120°, HFOV 82°, VFOV 56°
THERMAL CAMERA	30 Hz 640x512, measured temperature range: -40°C to +550°C
TRANSPORT	
CASE	Robust case for long-term industrial use
OUTER CASE DIMENSIONS	1532 x 585 x 514 mm, depending on configuration
TOTAL SYSTEM WEIGHT	appr. 60 kg, depending on configuration

For pricing and configuration information contact us at sales@evologics.com or call +49 30 4679 862 - 0

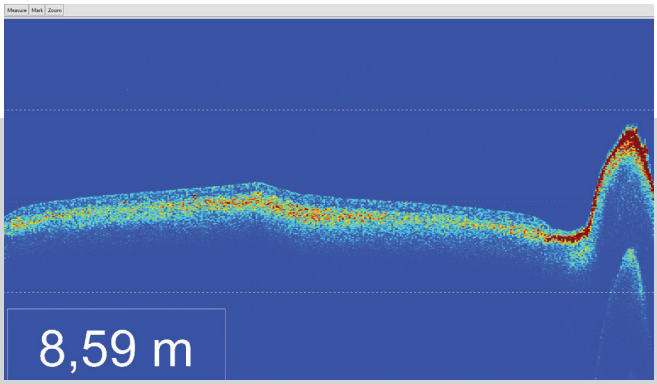
Specifications subject to change without notice. © EvoLogics GmbH - May 2024



MISSION PLANNING
The measurement grid



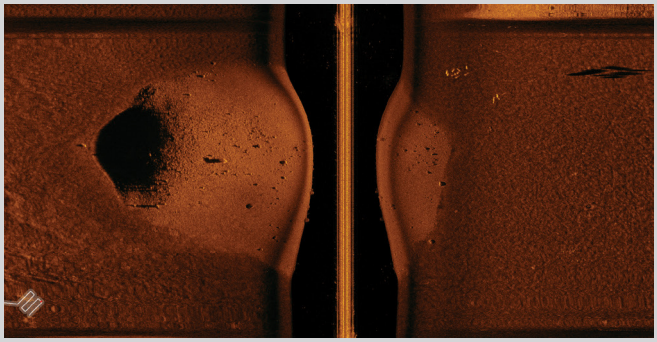
DURING THE MISSION
The operator's live view



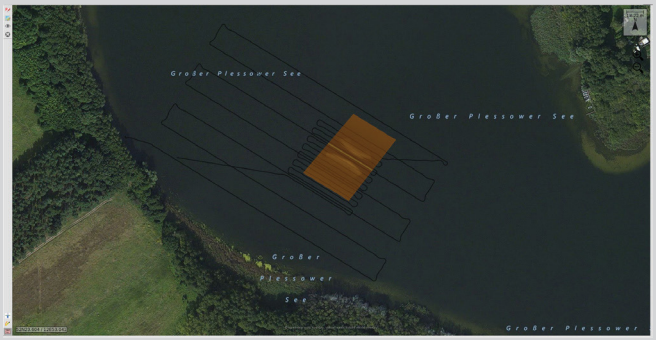
DURING THE MISSION
The depth profile live view



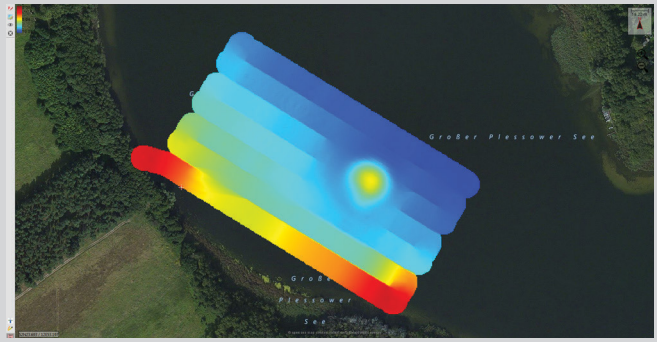
DURING THE MISSION
Front camera view



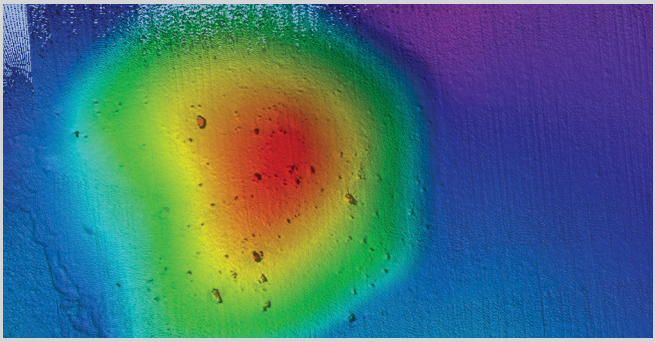
DURING THE MISSION
Side-scan sonar live view



MISSION RESULTS
Side-scan sonar image



MISSION RESULTS
Single-beam echosounder bathymetry in 2D



MISSION RESULTS
Multibeam sonar bathymetry in 3D



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