



AGILE. PRECISE. DATA-DRIVEN.

EXRAY™

Technical Specifications



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HYDROMEA

EXRAY™ ROV

EXRAY™ is a professional underwater inspection robot specifically developed for detailed inspections of complex submerged assets.

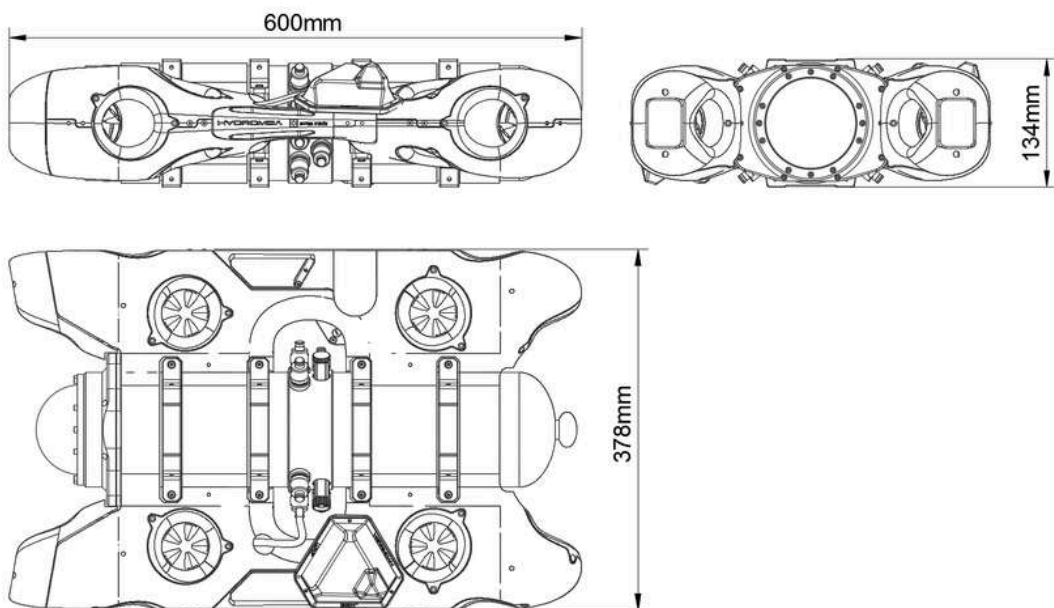
Slim, light, agile, smart, and highly modular with increasing roster of payload sensors, it is an excellent tool for tough underwater inspection missions.



VEHICLE SPECIFICATIONS

Dimensions (LxWxH)	600 x 378 x 134 mm (23.62 x 14.88 x 5.28 in)
Weight in Air	9 kg (20 lbs)
Weight in Fresh Water	Neutrally buoyant, with adjustable buoyancy for other environments
Depth Rating	200 m (656 ft)
Max Speed	1m/s forward/backward *
Thrusters	Rim-driven hubless hydro-lubricated design. 4 vectored + 4 vertical. Power Train Consumption: Hovering: 50 W Average: 70 W Strong Currents: 200 W
Dexterity	6 DOF
Lights	Adjustable, up to a total of 4800 lumen
Construction	HDPE, anodized aluminum, POM
Endurance	Between 4 to 6 hours *
Internal Memory	32 GB (10h recording), additional slot for a microSD card (256 GB max)
Operating Temperature	0°C to 40°C (32°F to 104°F)
Aux Ports	2x Serial RS232/RS485 and CANbus, 2x Ethernet 10/100, 1x Gigabit
Automation	Auto depth, auto pitch; station hold with optional DVL
IMU Sensor	9 axes, accelerometer, magnetometer, gyroscope
Depth Sensor	0 to 30 bar range, 0.2 mbar resolution
Optional Payload	Gripper, UT Sensor, DVL, Scanning Imaging Sonar, Multi-beam Sonar, SPEERA™ Vacuum Cleaner. (Page 6)

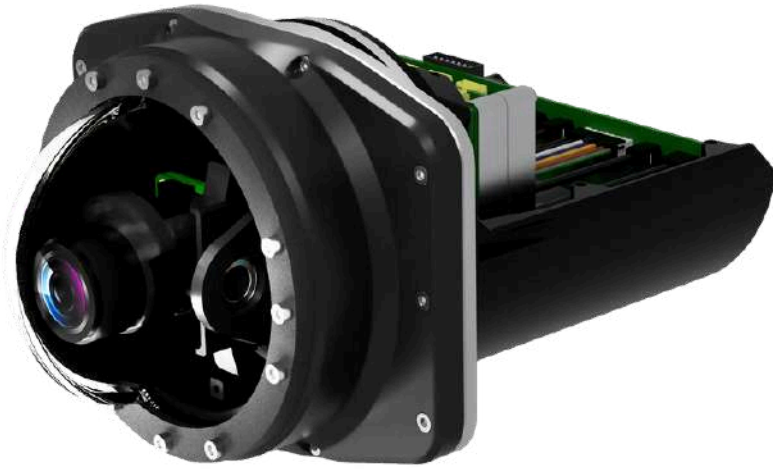
*PRELIMINARY SPECIFICATIONS - MAY BE SUBJECT TO CHANGE WITHOUT NOTICE



EXRAY™ ROV

CAMERA SPECIFICATIONS

Video	FHD, 24 Hz, .mkv
Images	FHD, 4K, RAW, .jpeg
Tilt	±70°; horizontal
Horizontal Field of View	110°
Focal Length	2.7-13 mm (0.11-0.51 in)
Optical Zoom	2.5x - 3x (5 - 20 m (16 - 66 ft))
Focus	Adjustable focus - from the camera dome surface to infinity, even while zoomed in.



TETHER SPECIFICATIONS

Type *	Twisted copper pair, ruggedized Optional: Single mode fiber up to 2,000 m (6,516 ft)
Length *	100 m (328 ft)
Diameter *	4 mm (0.16 in) low drag
Weight in Water	Neutrally buoyant
Minimum Breaking Strength	155 kgf (342 lbf)

*ADJUSTABLE UPON REQUEST



SWAPPABLE BATTERIES

Type	Lithium Ion stackable (Max ROV load - 3 batteries)
Nominal Voltage	14.4 V (maximum voltage 16.8 V)
Nominal Energy	97.92 Wh per battery
Weight in Air	415 g (0.9 lbs) per battery
Charge Time	1 hour (0% → 80%)
Option	Batteries can be charged simultaneously directly inside the EXRAY™



EXRAY™ WIRELESS SYSTEM

The **EXRAY™ ROV** can be seamlessly upgraded with the **EXRAY™ FLYOUT**, transforming a tethered ROV into a zero-latency wireless inspection system powered by the advanced **LUMA™** high-bandwidth communication technology.

When docked, the **EXRAY™ FLYOUT** and **EXRAY™ ROV** function as a single integrated unit. Once the pilot positions the system near the inspection target, the **FLYOUT** can be detached from the **ROV**, enabling remote control with real-time HD video streaming, as if still tethered.



SYSTEM SPECIFICATIONS

Dimensions for the Wireless System (LxWxH) 629 x 378 x 321 mm (24.76 x 14.88 x 12.64 in)

Weight in Air 18 kg (40 lbs)

All other specifications for the **EXRAY™ FLYOUT** are identical to that of **EXRAY™ ROV**.

INCLUDED PAYLOAD

DOCKING RAILS

Nominal Voltage 11V - 16.8V

Nominal Power 8 W

Sensors Positioning / locking

Weight in Water Neutrally buoyant

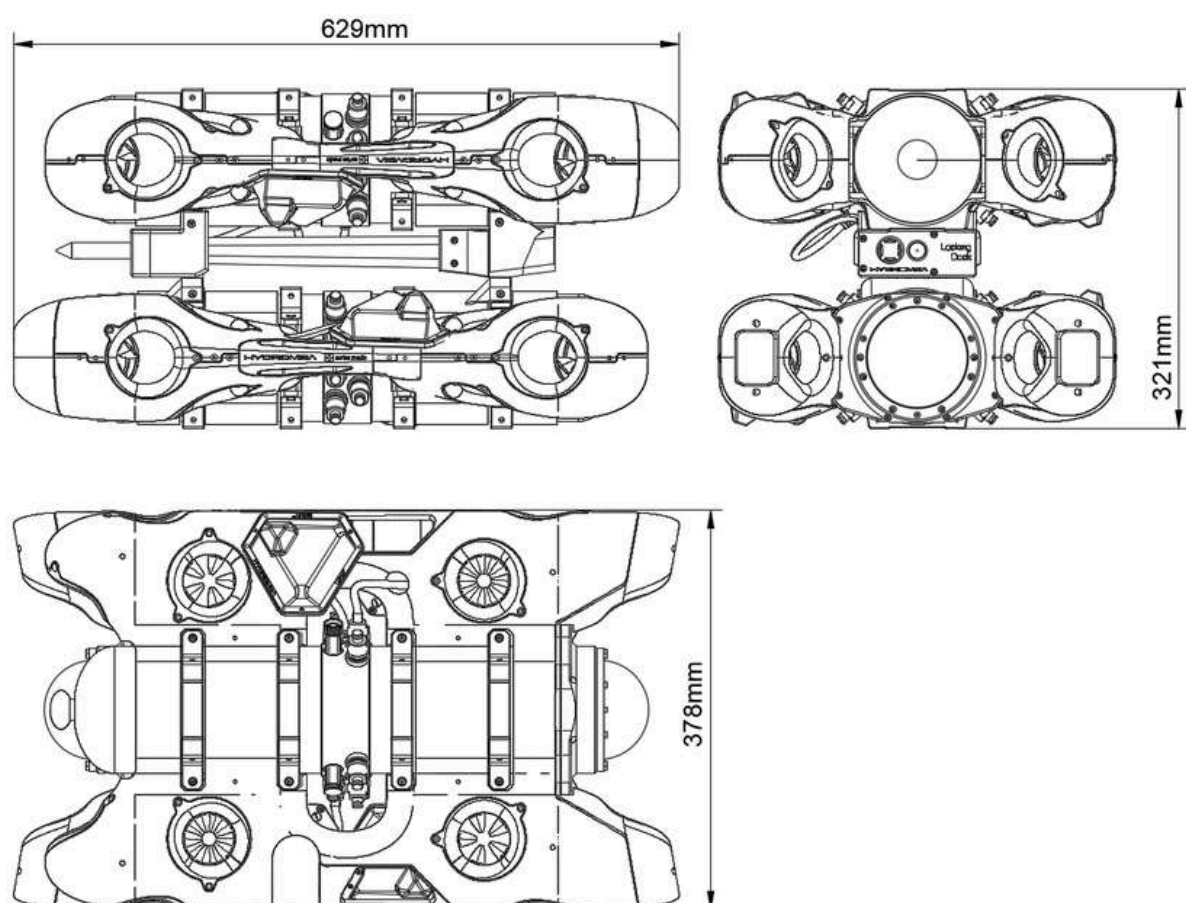
OPTIONAL PAYLOAD

Each robot is equipped with multiple versatile payload ports: 2x Serial RS232/RS485 and CANbus, 2x Ethernet 10/100, all with power.

Additionally, there's a 1x Gigabit port for high-speed data offloading.

These universal ports allow integration with the majority of industry-standard sensors. When a payload is connected, the **NAVIA™** intelligent management interface automatically recognizes it, making the payload's functions readily accessible through the **NAVIA™** user interface. New payloads are continuously added to the **EXRAY™** inventory and seamlessly integrated into the **NAVIA™** interface.

We also offer custom integration for any specific payload you need. Please contact us for more details.



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EXRAY™ PILOT & INSPECTOR STATIONS

The EXRAY™ PILOT STATION operates on NAVIA™, an intuitive control management platform designed for pilots. It provides comprehensive control over both the EXRAY™ ROV and EXRAY™ FLYOUT, as well as all system features.

The EXRAY™ INSPECTOR STATION serves as an optional extension of the PILOT STATION, ideal for scenarios where an inspection mission is overseen by an additional person, such as a class surveyor. This station enables real-time monitoring of the mission, along with the ability to add labels and comments to points of interest using NAVIA™'s proprietary workbook for data management and analytics.



PILOT STATION

INSPECTOR STATION

PILOT & INSPECTOR STATIONS

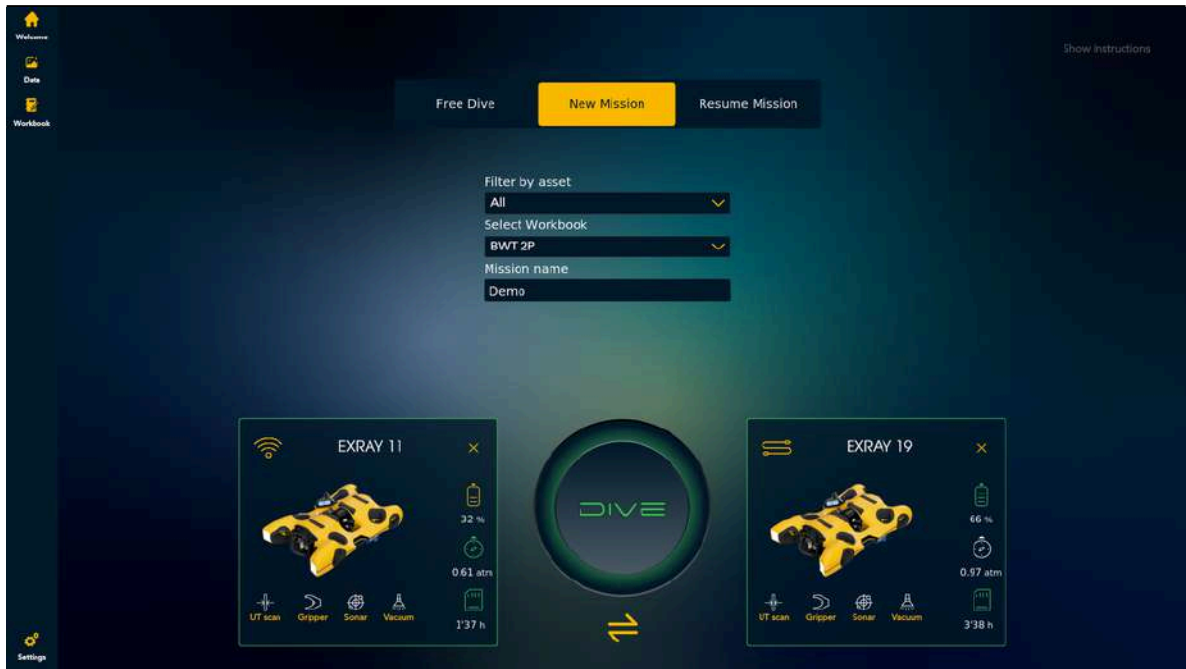
Dimensions (LxWxH)	420 x 320 x 180 mm (16 x 13 x 7 in)
Weight PILOT	8 kg (18 lbs)
Weight INSPECTOR	7 kg (15 lbs)
Ingress Protection	IP68 (closed), IP44 (open)
Screen	15.6 inch LCD touch screen 1080p/FHD
Keyboard, Touchpad	USB
Operating Temperature	0°C to 40°C (32°F to 104°F)
NAVIA™ Mission Platform	Fully integrated, intuitive professional interface and data management tool
Power PILOT	30 W
Power INSPECTOR	20 W
Plug	US, UK, EU
External Memory	microSD Card / USB Stick
Remote Controller PILOT	USB 2.0

NAVIA™ MISSION PLATFORM

NAVIA™ combines advanced technology and an intuitive interface to support pilots in dive missions by streaming live video, sonar, and sensor data, capturing measurements, and recording media on a single platform.

NAVIA™ enhances INSPECTOR STATION with a second screen for in-dive POI data capture and real-time annotations. Additionally, it supports EXRAY™ software upgrades, configuration, diagnostics, and issue communication.

To go one step further in data reporting and analysis, NAVIA™+ data management tool is available as an add-on license and it further streamlines workbook creation for various inspection types, integrating them with mission management. Data is intuitively labeled and can be auto-generated into detailed reports with one click. It also consolidates data from multiple EXRAY™ ROVs across missions for centralized analysis.



NAVIA™ MISSION PLATFORM



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Optional Payloads

PLEASE INQUIRE IF YOU NEED
SPECIFIC UNLISTED PAYLOADS.



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HYDROMEA

GRIPPER

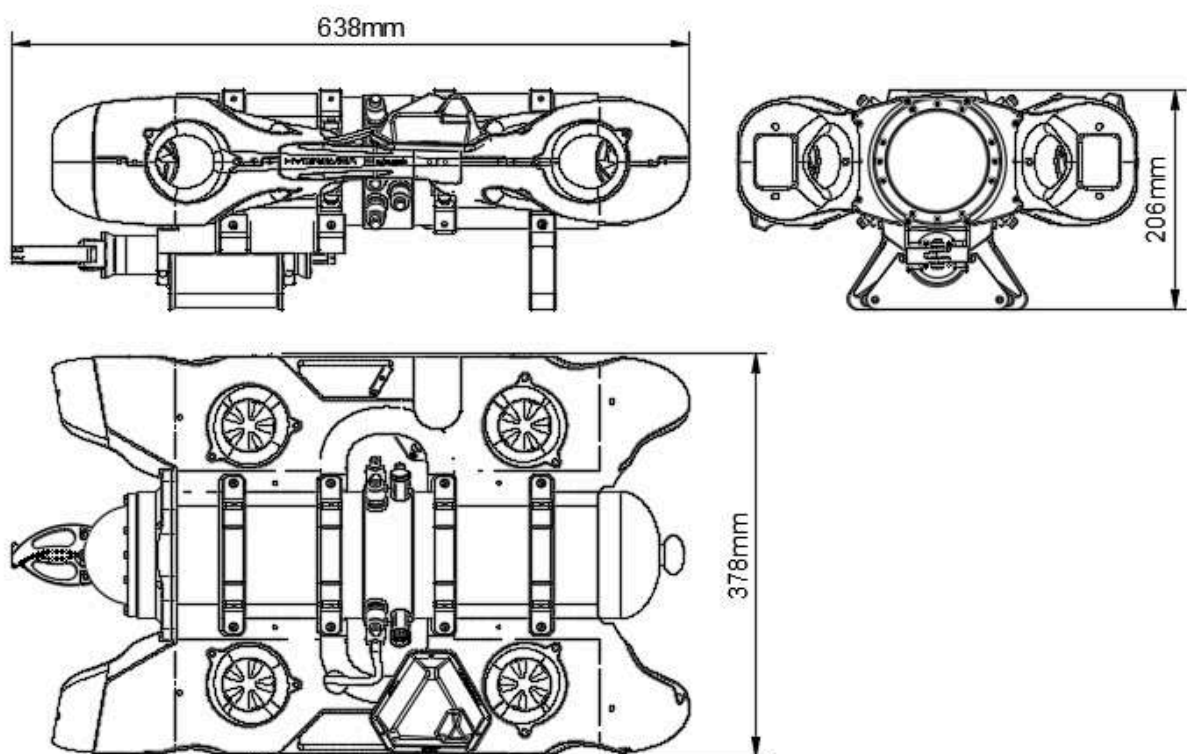
The Gripper supplied by BlueRobotics equips the **EXRAY™** with the capability to interact with the underwater environment, enabling tasks such as retrieving objects, attaching recovery lines, or freeing a snagged tether.

The Gripper is a fully integrated solution with **NAVIA™** without the need of an external system.



SYSTEM SPECIFICATIONS

Dimensions (L x W)	309.2 x 36 mm (12.17 x 1.42 in)
Weight in Air	524 g (18.5 oz)
Weight in Water	Neutrally buoyant
Pressure Rating	300 m (984 ft)
Supply Voltage	9 - 18 Volts
Grip Force	At Tip: 97N (22lbf) In Middle: 124N (28lbf)
Jaw Opening	62 mm (2.14 in)
Push-rod Axial Load Rating	3 kg (6.6 lb)



The Gripper as an optional payload allows **EXRAY™** to seamlessly interact with the subsea environment.



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UT SENSOR

EXRAY™ utilizes two types of ultrasonic probes supplied by Cygnus Instruments: twin crystal (T5B) and single crystal (S2C).*

Twin crystal probes are suited for measuring heavily corroded metals. Single crystal probes are ideal for reading through and ignoring coatings, operating in Multiple-Echo mode. They function in Echo-Echo mode, allowing them to read through and ignore up to 1 mm (0.040 inch) of surface coating, and in Single-Echo mode when there are no surface coatings. The frequency of the probes range from 2 MHz to 5 MHz and the overall weight of the UT Sensor is 1001 g (35.31 oz).

The UT Sensor is fully integrated with NAVIA™ without the need of an external system.



SYSTEM SPECIFICATIONS

Probe T5B for M1-OEM

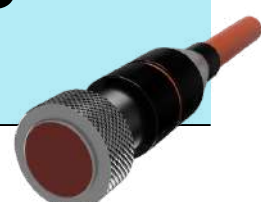
Frequency	5 MHz
Tip Size	12.7 mm (0.5 in)
Maximum Depth Rating	50 m (165 ft)
Range in Steel (Single - Echo)	1.5 - 200 mm (0.059 - 7.90 in)
Range in Steel (Echo Echo)	4 - 50 mm (0.16 - 2in)
Temperature Range	-10°C to +70°C (14°F to 158°F)



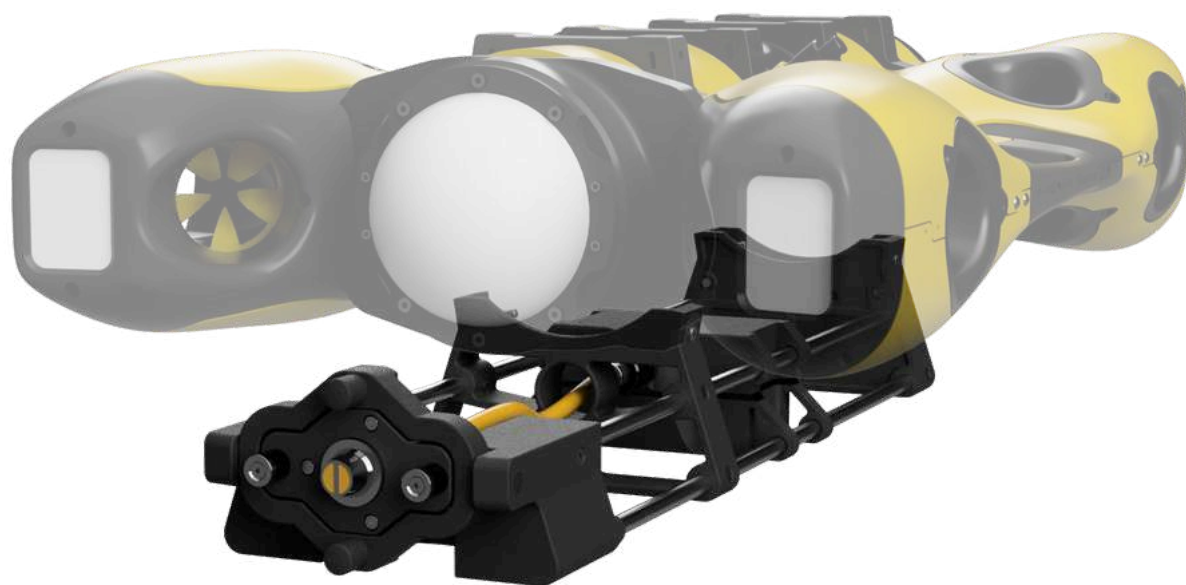
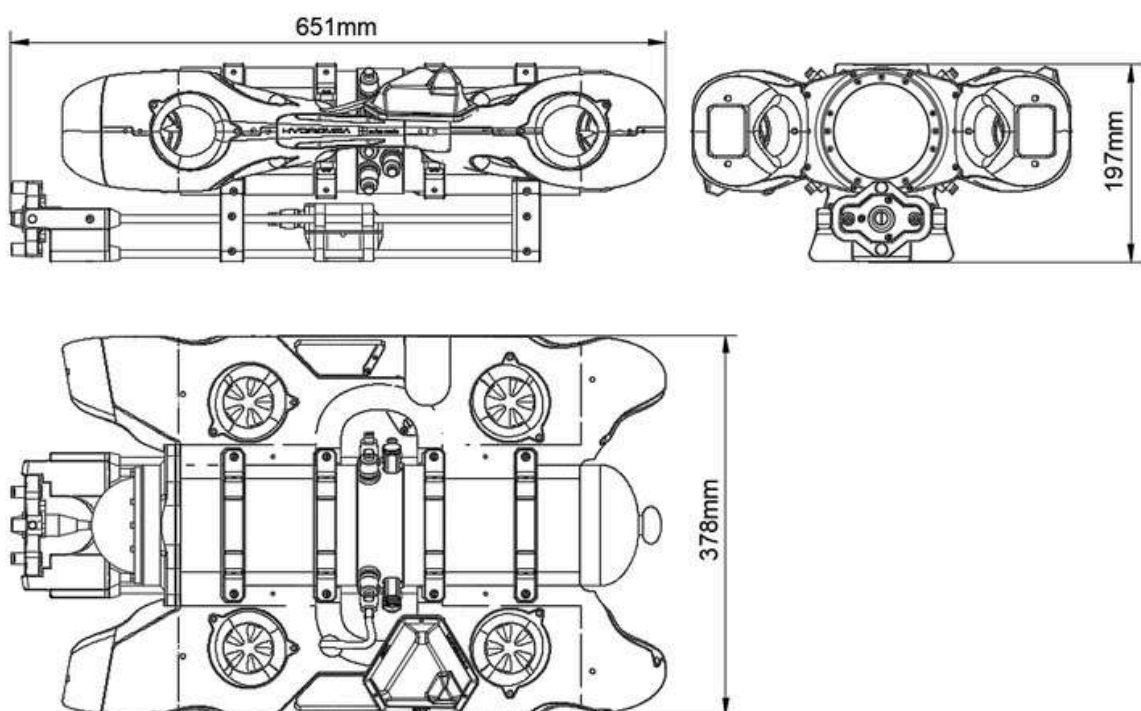
SYSTEM SPECIFICATIONS

Probe S2C for M1-OEM

Frequency	2.25 MHz
Tip Size	13 mm (0.5 in)
Maximum Depth Rating	300 m (984 ft)
Range in Steel (Triple - Echo)	3 - 250 mm (0.120 - 10 in)
Temperature Range	-20°C to +60°C (-4°F to +140°F)



*WE ARE ABLE TO PROVIDE OTHER PROBES UPON REQUEST.



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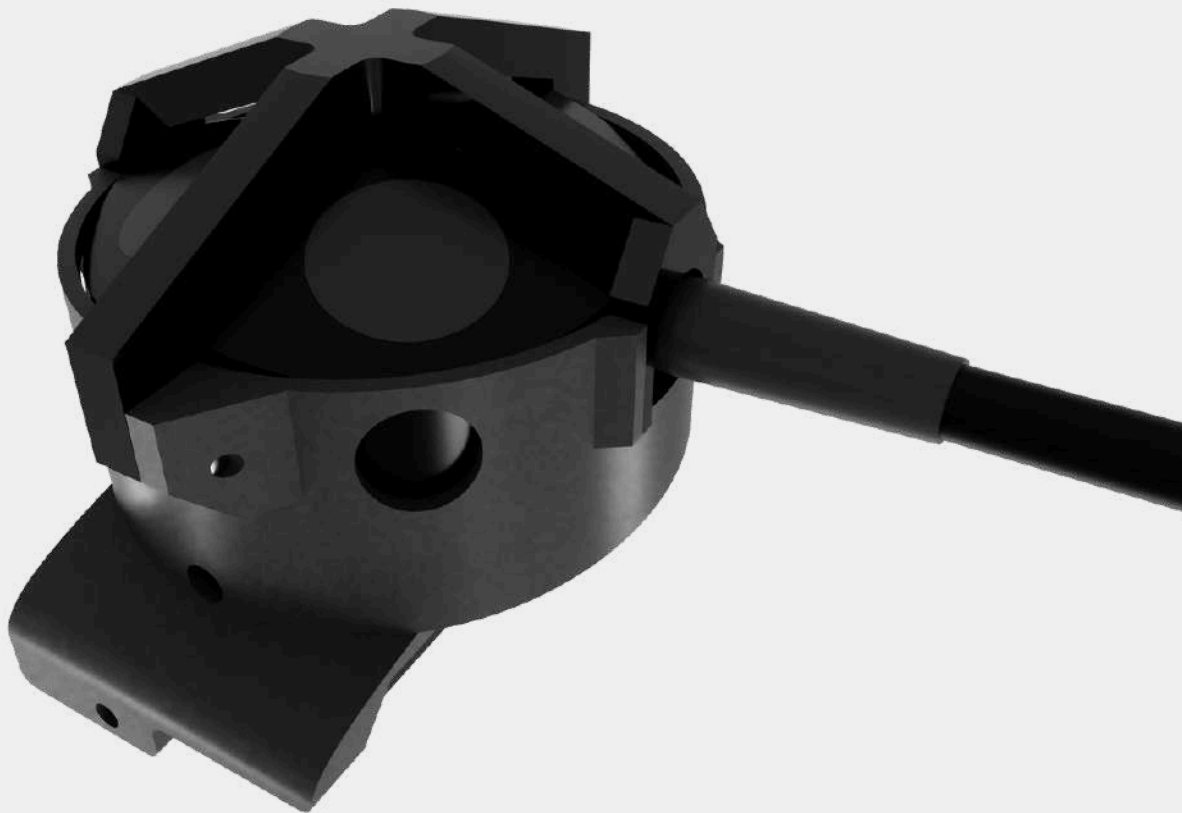
DVL

The DVL is the cornerstone that allows **EXRAY™** to achieve full autonomy.

Provided by Water Linked, the DVL calculates velocity relative to the seafloor by emitting acoustic waves from its four angled transducers and measuring the frequency shift (Doppler effect) of the returning echoes.

By eliminating the need for topside communication, the DVL serves as a navigation sensor for **EXRAY™**, ensuring seamless stability and control during its operations.

The DVL is fully integrated with **NAVIA™** without the need of an external system.



SYSTEM SPECIFICATIONS

Dimensions (Ø x H)	Ø 66 x 25 mm (Ø 2.56 x 1.38 in)
Weight in Air	170 g (6 oz)
Depth Rating	300 m (984 ft)
Power Consumption	4 W (Average)

ACOUSTIC SPECIFICATIONS

Transducer Frequency	1 MHz
Ping Rate	4 - 15 Hz (adaptive to altitude)
Minimum Altitude	50 mm (1.97 in)
Maximum Altitude	50 m (165 ft)
Maximum Velocity	3.75 m/s
Long Term Accuracy	Standard Version: ±1.01 % Performance Version: ±0.1 %



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SCANNING IMAGING SONAR

The Scanning Imaging Sonar is a mechanical scanning sonar designed for underwater navigation and imaging supplied by BlueRobotics.

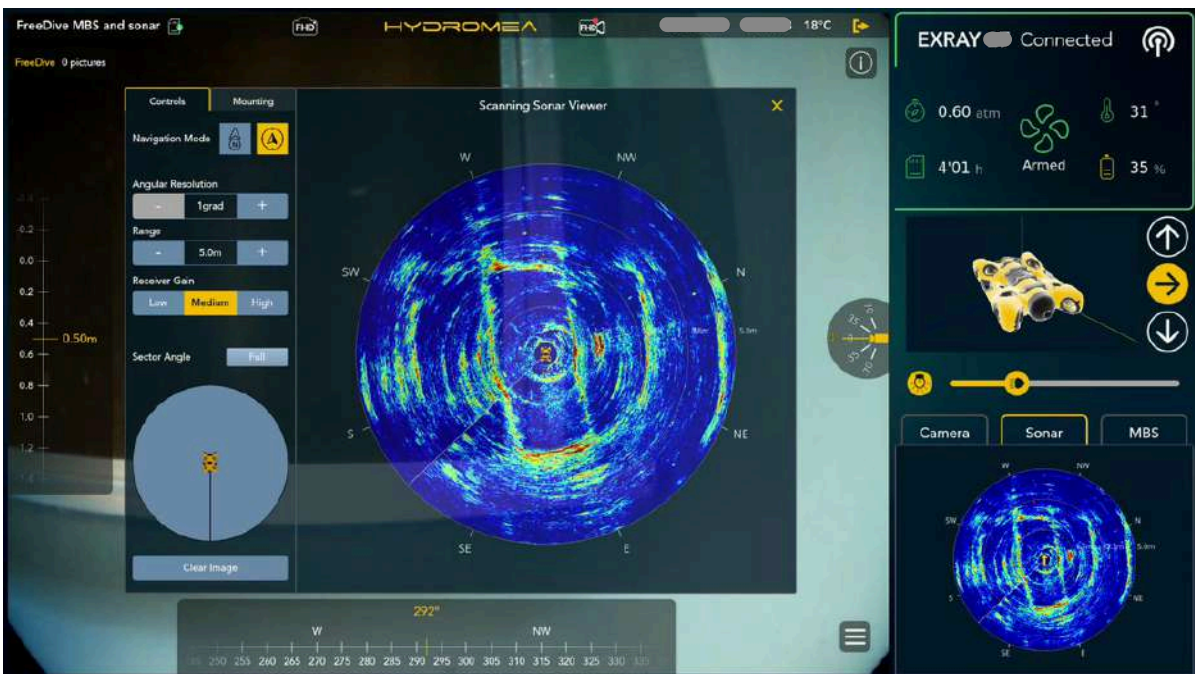
It aids in **EXRAY™** navigation by providing a top-down view of surroundings, using an acoustic transducer mounted on a rotating motor to produce detailed circular images of the underwater environment. This is a fully integrated solution with **NAVIA™**, allowing rotation and position compensation.



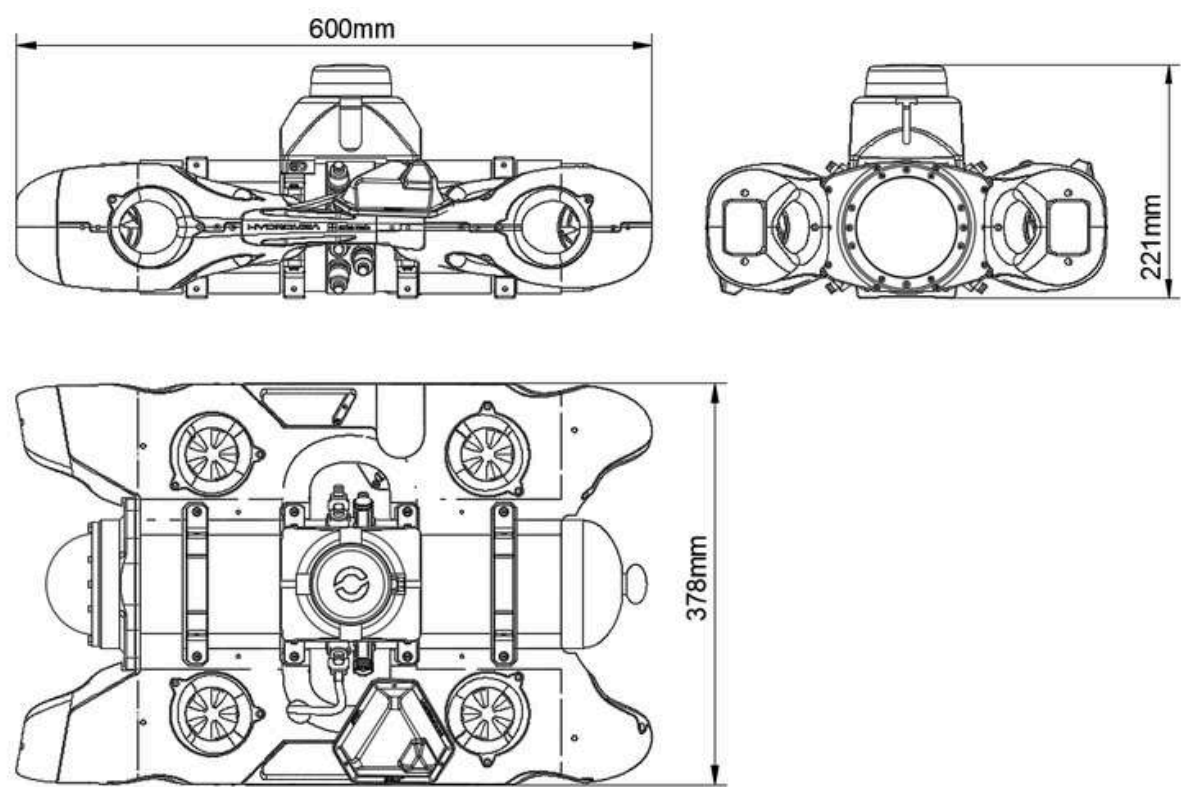
SYSTEM SPECIFICATIONS

Weight	770 g (27.16 oz)
Minimum Range	0.75 m (2.5 ft)
Maximum Range	50 m (165 ft)
Scanned Sector	Variable up to 360°
Scan Speed at 2m	9 sec / 360° *
Scan Speed at 50m	35 sec / 360° *
Pressure Rating	300 m (984 ft)
Temperature Rating	0°C to 30°C (32°F to 86°F)

**PRELIMINARY SPECIFICATIONS - MAY BE SUBJECT TO CHANGE WITHOUT NOTICE*



No external software is needed as the data management system is fully integrated in **NAVIA™**.



MULTIBEAM SONAR

The Multibeam Sonar from Blueprint Subsea provides a comprehensive view of surrounding structures, objects, and the seafloor, making it an excellent navigational aid for **EXRAY™**. With rapid image updates, it enhances the ability to identify specific objects, making it ideal for underwater inspections and delivering precise dimensional data on structures and other targets.

The Multibeam Sonar is fully integrated with **NAVIA™** without the need of an external system.



SYSTEM SPECIFICATIONS

Dimensions (LxWxH)	125 x 122 x 62 mm (4.92 x 4.80 x 2.44 in)
Weight in Air	980 g (34.57 oz)
Weight in Water	Neutrally buoyant
Depth Rating	500 m (1640.42 ft)
Operating Temperature Range	-5°C to 35°C (23°F to 95°F)
Storage Temperature Rating	-20°C to 50°C (-4°F to 122°F)

PERFORMANCE SPECIFICATIONS

	M1200d	M3000d
Operating Frequency	1.2 MHz / 2.1 MHz	1.2 MHz / 3.0 MHz
Maximum Range	40 m / 10 m (131.23 ft / 32.81 ft)	30 m / 5 m (98.43 ft / 16.40 ft)
Minimum Range	2.5 mm / 2.5 mm (0.098 in / 0.098 in)	2.5 mm / 2 mm (0.098 in / 0.079 in)
Update Rate	40Hz	40Hz
Horizontal Aperture	130° / 60°	130° / 40°
Vertical Aperture	20° / 12°	20° / 20°
Number of Beams	512	512
Angular Resolution	0.6° / 0.4°	0.6° / 0.4°
Beam Separation	0.25° / 0.16°	0.25° / 0.1°

SPEERA™ VACUUM CLEANER

SPEERA™ VACUUM CLEANER turns **EXRAY™ ROV** into a mighty underwater hoover that will clean up sediment on the bottom of tanks.

This is an optional streamlined payload that has been uniquely designed for **EXRAY™ ROV** to reach any remote area thanks to the various nozzle shapes and ROV exceptional maneuverability.

With different mesh and nozzle sizes, it will effectively remove sediments, small rocks and debris. **SPEERA™ VACUUM CLEANER** can be fully customized on request.



SYSTEM SPECIFICATIONS

Dimensions (LxWxH)	420 x 320 x 180 mm (16 x 13 x 7 in)
Weight in Air	800 g (1.76 lbs)
Rated Voltage	11 V - 16.8 V
Rated Power	50 W
Maximum Capacity	60 cl (20.29 oz)



The **SPEERA™** filter can be easily removed to clean or replace for another mesh size.

FILTER OPTIONS*

SMALL	
Mesh / Inch	200 (75µm)
Recommended Nozzle	Wide
Min. sediments Size	~0.2 mm (0.008 in)
MEDIUM	
Mesh / Inch	100 (150µm)
Recommended Nozzle	Wide
Min. sediments Size	~0.5 mm (0.02 in)
LARGE	
Mesh / Inch	20 (841 µm)
Recommended Nozzle	Large
Min. sediments Size	~2 mm (0.078 in)

**SPECIAL MESH SIZE CAN BE CREATED UPON REQUEST*

NOZZLES

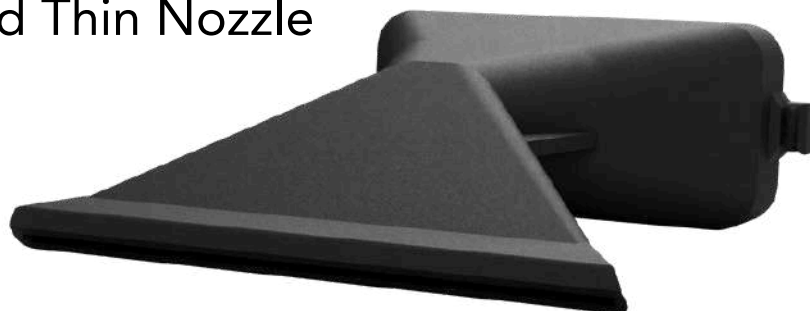
WIDE AND THIN

Use Case	Used for collecting small sediment over a large zone
Nozzle Entry Dimensions (L x w)	24 x 35.5 mm (0.94 x 1.40 in)

LARGE AND ROUND

Use Case	Used for collecting bigger sediment and objects, and allowing easier access to corners.
Nozzle Entry Dimensions (L x w)	3 x 150 mm (0.12 x 5.9 in)

Wide and Thin Nozzle



Large and Round Nozzle



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