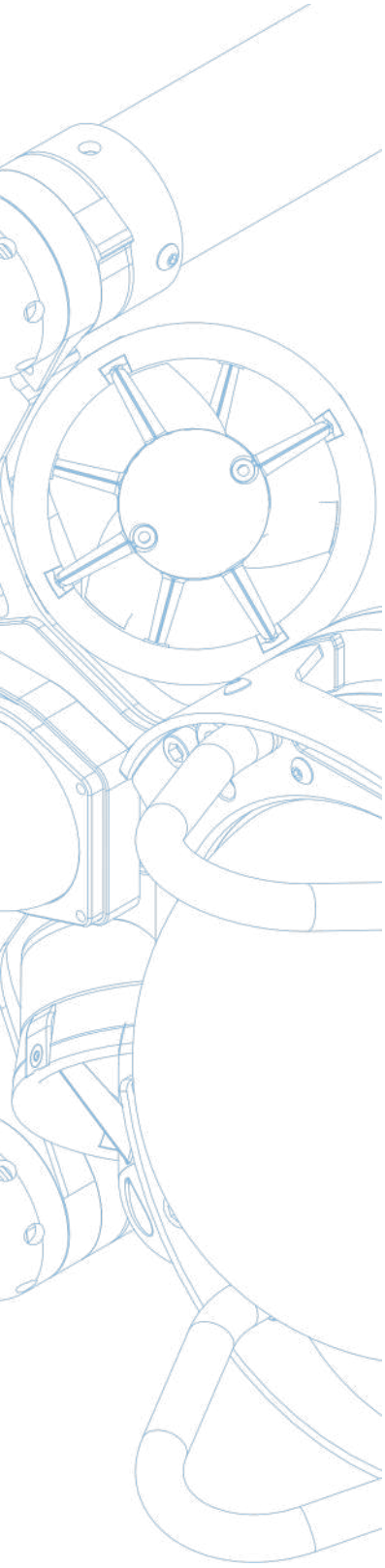
Boxfish AUV

AUV Summary

- Hovering autonomous underwater vehicle
- Built on the field-proven Boxfish platform, which offers Six Degrees of Freedom of Movement
- Wireless communications and smart network design
- Long battery life (typically 3-12 hours)
- On-board computer
- Onboard controller with open protocol to simplify vehicle control
- Fibre-optic tether option for monitoring, remotely operated or semi-autonomous operation

BOXFISH® ROBOTICS

Hovering Autonomous Underwater Vehicle



Introducing the Boxfish AUV

The Boxfish AUV represents our latest generation of customisable hovering AUVs, offering six degrees of freedom operation and dynamic stabilisation. It's expandable architecture support both autonomous operation and optionally tethered, high-bandwidth cameras and sensors via a fibre optic connection. With the ability to integrate up to 8 sensors, the Boxfish AUV becomes a powerful scientific tool.

Onboard battery power and support for optional imaging sonar, DVL, and other sensors in additional to the standard USBL makes the Boxfish AUV truly autonomous. On-board computer running ROS 2 complements our standard controller and allow to get the additional control you desire. A simple command structure allows high level control of the Boxfish AUV and simplifies automation.

The Boxfish AUV optionally comes with a strong but lightweight fibre optic tether that uses a 10Gb channel for video to monitor autonomous operations and a 1Gb channel for data.

Autonomy and Expandability

The Boxfish AUV comes standard with systems to allow autonomous operation:

- On-board computer,
- On-board controller that does all the work of driving the thrusters and maintaining stability with simple commands for controlling the AUV's attitude and movement and obtaining telemetry,
- On-board USBL system which allows the AUV to know its position,
- On-board depth sensor and IMU,
- Standard support for additional external sensors (ethernet, RS-232, RS- 422, RS-485)
- Standard power for external sensors (12V @ 50W and 24V @ 50W)
- Optional stereo forward machine vision cameras (alone or alongside our 4K camera),
- Optional DVL,
- Optional imaging and profiling sonars,
- Optional environmental sensors,
- Optional tether and control station.

Sample Software

We can provide sample software for interfacing with:

- ROS 2 to controller interface (telemetry and vehicle control, e.g. lights, pitch, thrust vector),
- ROS 2 to USBL, compass, and DVL.

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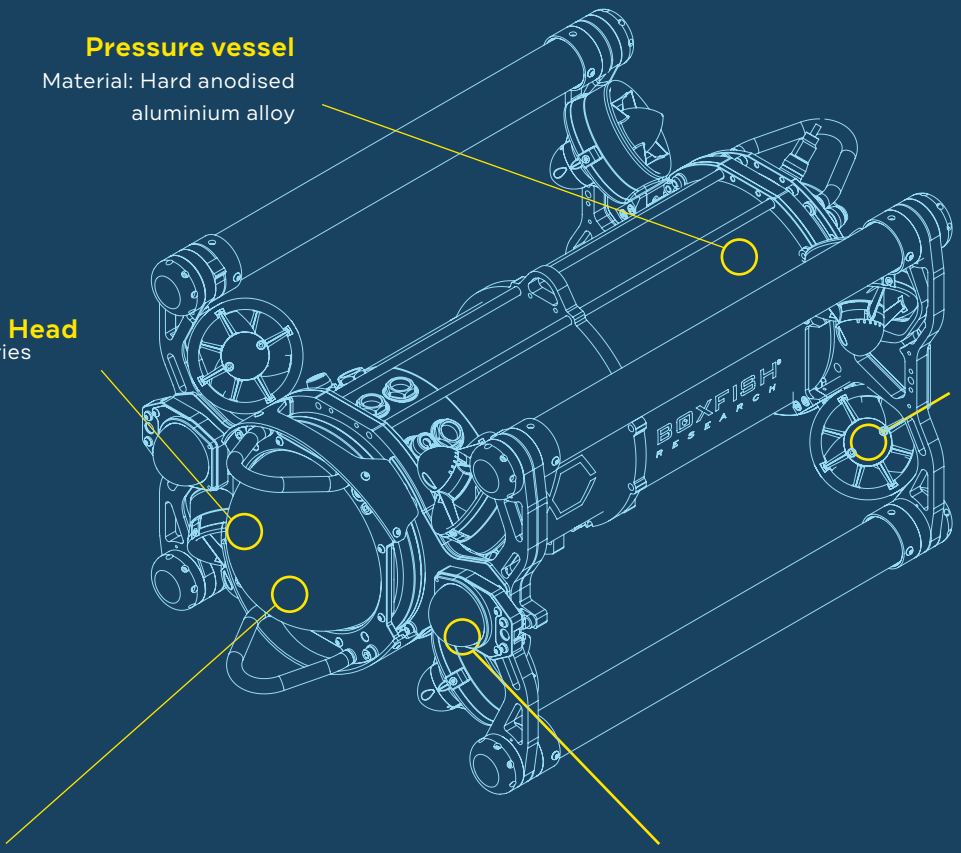
Boxfish AUV

Technical Specifications

UN38.3



Pressure vessel
Material: Hard anodised aluminium alloy

Camera Head
Shape varies

Rear camera options
IP H.264/H.265/MJPEG, or FLIR/Basler/IDS CS-mount machine vision camera at the rear

Thruster layout
8 vectored

Accessory rail system optional
2 x 460mm length parallel (top, bottom) 8mm diameter, 52mm spacing (centre to centre)

Main camera options

- FLIR/Basler/IDS machine vision cameras (stereo)
- 4K camera
- IP navigation camera (H.265)
- All camera options can be supported together

Integrated sensors

- Depth sensor
- IMU
- USBL
- Internal pressure
- Temperature and humidity monitoring
- Battery voltage (and remaining percentage)
- Leak detection

Optional sensors

- DVL
- Imaging sonar
- Environmental sensors
- External cameras

Lighting

- Forward: 2 x 8,500 lumen, high CRI, dimmable
- Adjustable arms and ball mounts for excellent lighting in all orientations
- Reverse lights
- Additional forward lighting options available

ROV

Depth rating 300m

Dimensions
(l/w/h): 714mm (28in)/ 435mm (17in)/ 351mm (14in)

Weight
24kg (salt water ballast)

Operating temperature
-10˚C to +45˚C

Battery capacity
600 Wh battery endurance: 3-12 hrs (typical use)

Battery recharge time
Overnight charge AC (typical)
Fast 1 hour charge optional

Standard external connections
Boxfish tether connector
Boxfish charge connectors

External sensor integration
Up to six Boxfish standard ports (other options available)

Data
RS485, RS422, RS232 and ethernet (10/100/1000mbps)
Optional additional CWDM channels (to optional 1GE or 10GE copper media converters)

Power to external connections
12V @ 50W and 24V @ 50W

Optional onboard computer
NVIDIA Jetson Xavier (optionally running ROS 2)

Tether option

Type: Fibre optic with synthetic strength members

Buoyancy: Neutral in sea water

Length options: custom, up to 3,000m optional

Diameter: 2.7mm

Breaking strength: 110kg

Surface Control Station

17” 4K UHD main display

Camera zoom control

Three joysticks for easy control

Weatherproof design

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