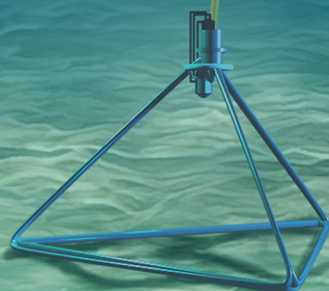




H A V S A N S



ENVIRONMENTAL INSIGHTS THROUGH LIVE OCEAN DATA.



Access realtime ocean data on
havsans.grafana.dk

Email: contact@havsans.dk
Website: www.havsans.dk

ABOUT HAVSANS OCEAN BUOY

The Havsans buoy is a cost-effective, modular solution designed to monitor key ocean parameters. It delivers high-quality data on dissolved oxygen, conductivity, and temperature, supporting industries and organizations in managing and protecting marine environments.

KEY FEATURES:



Standard Configuration for Oxygen Monitoring

The off-the-shelf buoy is configured with sensors optimized for oxygen measurements, including dissolved oxygen, conductivity, and temperature sensors.



Optional Add-Ons

A biofouling prevention wiper/shutter system for extended deployment reliability.



Depth Capability

Supports deployments at depths of up to 50 meters.



Accuracy

All sensors are calibrated before deployment to ensure accurate measurements.



Custom Sensor Integration

The modular design allows for the integration of additional sensors upon request, ensuring adaptability to specific customer needs.



Connectivity

Reliable NB-IoT and LTE-M communication with robust coverage in most of Denmark's coastal waters.



Low Maintenance

Solar-powered and self-sustaining for long-term deployments.

APPLICATIONS AND USE CASES



Environmental Monitoring

Assess water quality and detect hypoxia in coastal and marine ecosystems.



Research and Academia

Provide data for studies on marine ecosystems, climate impacts, and biodiversity.



Aquaculture Industry

Optimize feeding for improved productivity and reduced environmental impacts.



Ocean Modeling

High-quality data with high temporal resolution for calibration, assimilation and validation of ocean models.



Coastal and Marine Resource Management

Support decision-making for sustainable management of the marine environment.

DATA-AS-A-SERVICE MODEL

Our flexible Data-as-a-Service (DaaS) model provides customers with live environmental data without the burden of owning or maintaining hardware.



Uptime-Based Billing

Customers pay only for the data successfully delivered, ensuring predictable costs.



Proactive Maintenance

Online system status and regular equipment checks minimize downtime and ensure reliability.



Data Forwarding

Optional API integration to forward data directly to customer systems.



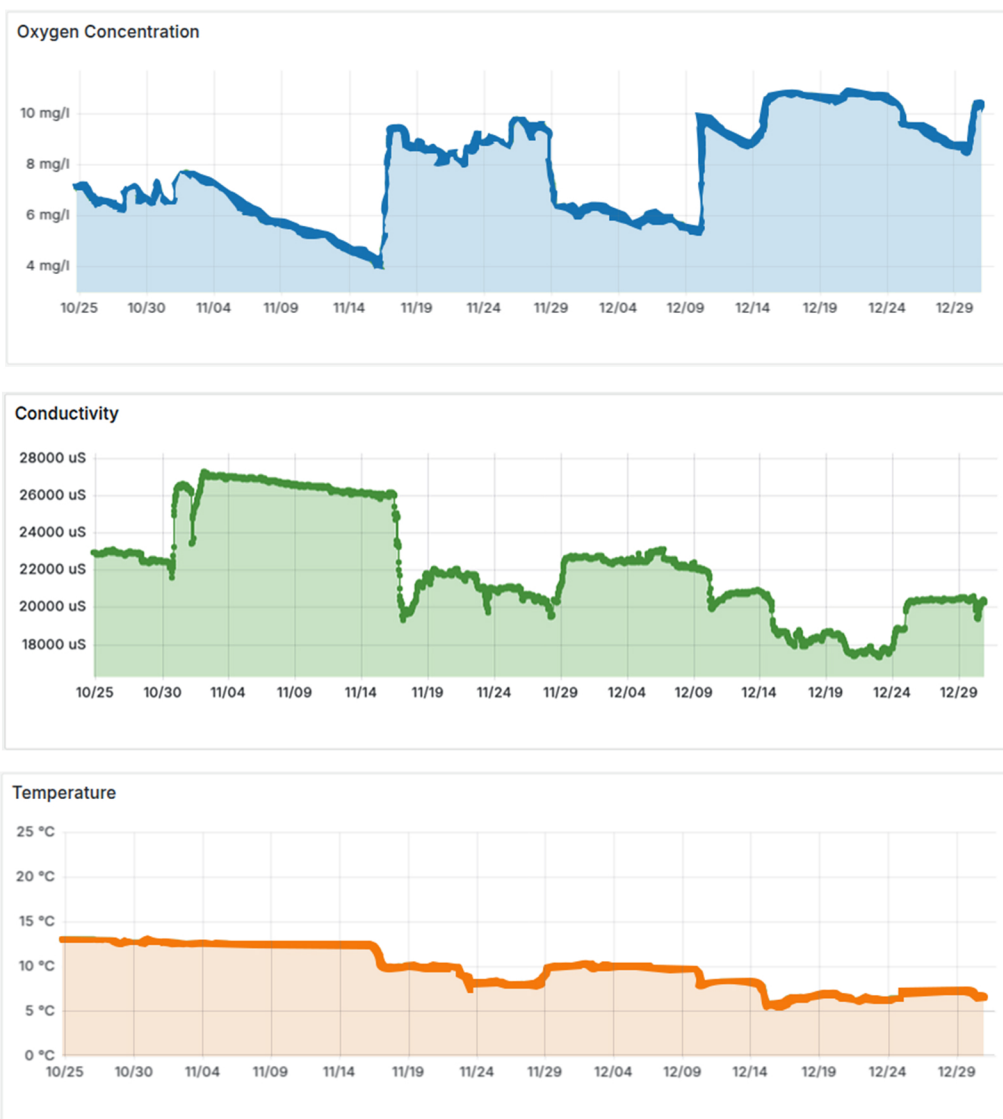
Hassle-Free Deployment

Havsans handles all aspects of deployment, including obtaining necessary permissions.



Data Access

Intuitive platform for real-time visualization and downloadable data in multiple formats.



Plots showing dissolved oxygen, conductivity, and temperature measurements from a buoy deployed in the waters around Funen, Denmark, during a 2024 measurement campaign.

TECHNICAL SPECIFICATIONS

Dissolved Oxygen Sensor

- Measuring Range: 0–25 ppm
- Accuracy: $\pm 1\%$ of reading or 0.05 ppm, whichever is greater
- Drift: $<1\%$ per year
- Integrated Temperature Sensor: 0°C to 60°C

Conductivity Sensor

- Measuring Range: 5–200,000 $\mu\text{S}/\text{cm}$
- Accuracy: $\pm 2\%$

Sampling and Telemetry

All sensors are sampled and transmitted at regular intervals. Sampling/transmission intervals can be set according to user requirements.

Deployment Depth

Up to 50 meters (buoy configuration)

Power Source

Solar-powered for long-term, self-sustaining operation designed to generate sufficient power for year-round use in northern countries like Denmark.

Pre-Deployment Calibration

All sensors are calibrated to ensure accuracy and reliability

Regulatory Compliance

Purpose-built to meet Danish seawater regulations, ensuring proper coloring, visibility markings (cross), height above seawater, and integration of an approved lantern light source.

Expandable Design

Supports integration of additional sensors upon request

WHY CHOOSE HAVSANS?



Adaptability

The buoy's modular design makes it future-ready, allowing custom sensor integration to meet evolving requirements.



Reliable

Tested in Danish coastal waters for robust performance.



Customer Convenience

Havsans manages deployment, permissions, and maintenance.



Cost-Effective

Uptime-based billing reduces costs during downtime.



Accuracy Assured

Sensors are calibrated before deployment for precise measurements.

