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Environmental  
Monitoring



## EcoMapper Nano

Compact, autonomous underwater survey vehicle



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# EcoMapper Nano

**EcoMapper Nano** is a compact, autonomous underwater vehicle (AUV), compatible with the full line of EXO-S Multiparameter Sondes, which can monitor up to 15 water quality parameters at once. It is also equipped with a Doppler Velocity Logger (DVL) for precise navigation.



## Benefits



### Ultra-portable, one-person deployment

Lightweight and compact for easy deployment without a boat or crew



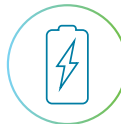
### High navigational accuracy

Tracks total distance traveled with 2% accuracy for reliable mapping



### Accurate vertical profiling

Provides precise vertical water column data with a max depth of 250 meters



### Long battery life

Rechargeable batteries deliver an average of 8 hours of continuous run time



### Broad sensor compatibility

Compatible with all EXO-S water quality sondes and sensors



### Intelligent operations

Fully autonomous survey missions that can be planned before stepping into the field




Plan your mission ahead of time and monitor the status with the SEACOMM controller, then call the Nano home when the survey is complete.



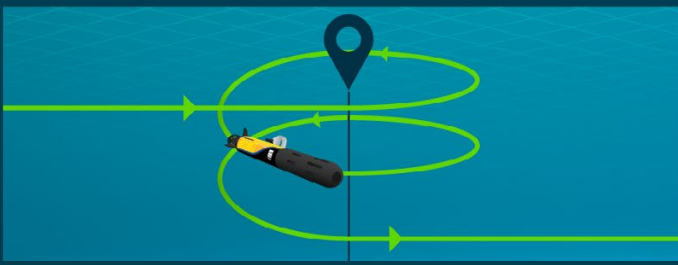
# Operation modes

The EcoMapper Nano has multiple operation modes to capture precise data throughout its mission.



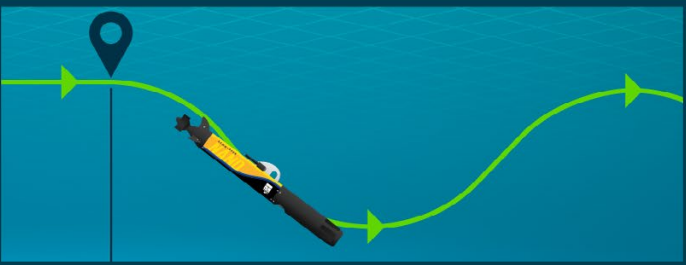
The diagram shows a yellow and black EcoMapper Nano submersible moving along a straight green line between three blue location pins. The line starts at the first pin, goes to the second, then straight to the third, and finally back to the first, forming a path.

**Transect**  
The Nano travels in a straight path between waypoints.



The diagram shows the EcoMapper Nano submersible spiraling around a central blue location pin. The path is a green helix that moves up and down as it circles the pin.

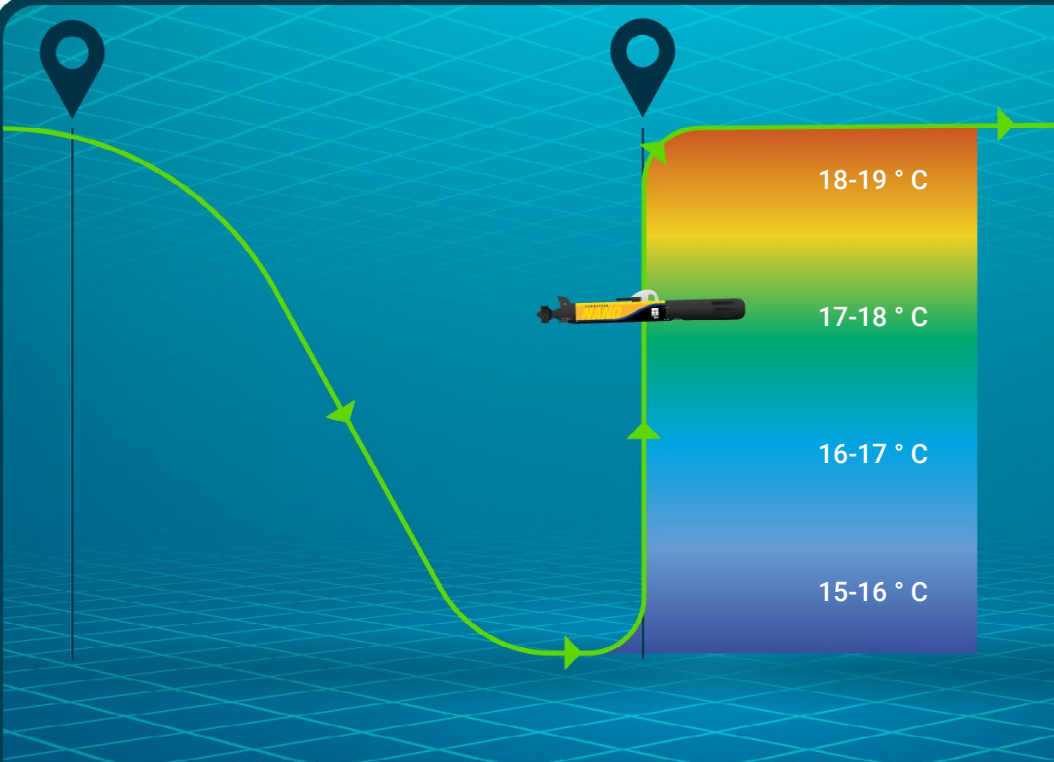
**Helix**  
The Nano will spiral up or down with a user-specified radius at a waypoint.



The diagram shows the EcoMapper Nano submersible following a wavy green path between two blue location pins. The path is a smooth, undulating line that rises and falls between the pins.

**Undulation**  
The Nano will follow a wave-like path between waypoints.

# Vertical profiling

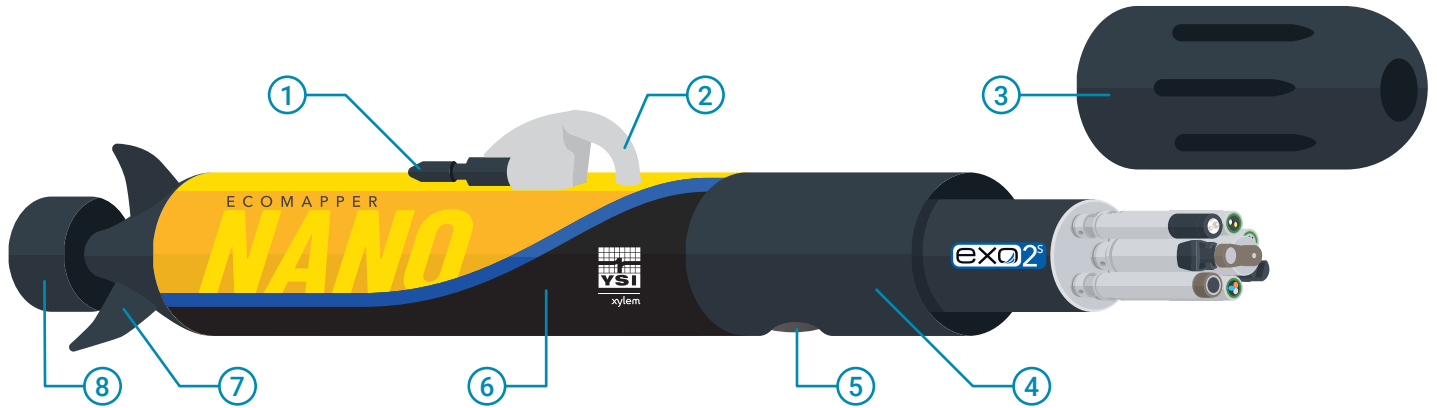


The diagram shows the EcoMapper Nano submersible diving from a blue location pin on the left to a second blue location pin on the right. A vertical cross-section of the water column is shown to the right of the Nano, with a color gradient from blue at the bottom to orange at the top. The Nano is positioned in the middle of this cross-section. The temperature ranges are listed on the right side of the cross-section.

**Profiling**  
The Nano dives then floats up at a desired waypoint, capturing a complete picture of the water column and delivering the insights needed to make informed decisions.

18-19 ° C
17-18 ° C
16-17 ° C
15-16 ° C

# Hardware overview



1	Start key and charging port	5	Doppler Velocity Logger (DVL)
2	Mast, used as a handle to hold the AUV and contains the UHF radio communication, GNSS antenna, and status LEDs	6	Sealed dry body section containing the battery and electronics
3	Nose cone, allows water to pass over the water quality sensors	7	Directional fins
4	Payload chamber for the EXO Multiparameter Sonde	8	Propulsion thruster

EcoMapper Nano is compatible with any EXO-S Sonde. An adapter is available to fit the vehicle with the EXO1s.

## Specifications

### Vehicle features

Length	123 cm (48.43 in)
Body diameter	12 cm (4.72 in)
Weight (in air)	9.5 kg (20.9 lbs)
Depth rating	0 to 250 m (0 to 820 ft)
Speed	3–6 knots
Battery duration	10 hours @ 3 knots, 6 hours @ 4 knots
Navigation accuracy	±2% of distance traveled
Power	Li-Ion: rechargeable 600 Wh/14.8 V
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 EcoMapper Nano status messages and orders 868 Mhz frequency range (depends on region) PYCOM LOPY4 chip with available regions: AS923, AU915, EU868, US915, IN865 TX Power: 25 mW
Available accessories	Rugged transport case Spare parts and tools in waterproof bag

### DVL sensor

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

### EXO Sonde options

EXO1s (with adapter), EXO2s, EXO3s

### EXO Sonde sensor options

Conductivity/Temperature, Depth, Dissolved Oxygen, fDOM, ISE Ammonium, ISE Chloride, ISE Nitrate, pH, pH/ORP, Rhodamine, Total Algae (Phycocyanin or Phycoerythrin), Turbidity, UV Nitrate

### Warranty

EcoMapper Nano	1 year
EXO Sonde	3 years



YSI Incorporated  
1725 Brannum Lane  
Yellow Springs, OH 45387

Tel +1 937.767.7241  
Email [info@ysi.com](mailto:info@ysi.com)  
[YSI.com](http://YSI.com)

