Spotter Platform

Spotter

A flexible metocean buoy that delivers real-time wave, wind, temperature, and barometric pressure data to researchers, operators, and innovators.

Key Features

Connected
Use the Spotter Dashboard and API to access real-time data sent via satellite and cellular and stored in the cloud. Two-way communication reduces downtime and enables over-the-air firmware updates.

Scalable
Significantly lower total cost of ownership compared to traditional platforms. Deploy Spotters at scale to maximize the spatial density of observational networks.

Rapidly Deployable
Easy to deploy by hand without prior experience. Rugged design has enabled thousands of successful deployments from all vessel types.

Extremely Durable
Designed by ocean scientists and proven to withstand any marine environment, from ice to high latitudes to extreme heat. Operates continuously using a solar rechargeable battery.

Spotter Measurements

≋ Wave & Wave Spectra

⇌ Wind (Derived)

⏱ Atmospheric Pressure

🌡 Sea Surface Temperature

Trusted By

USGS | IOOS Integrated Ocean Observing System | ONR | NOAA | 東京大学 THE UNIVERSITY OF TOKYO | US Army Corps of Engineers
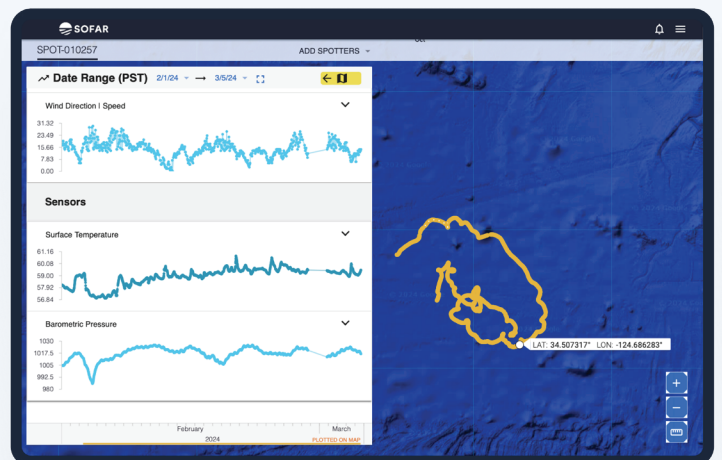
Instant Data Access, User-Friendly Dashboard

Access, view, and download real-time and historical data

Adjust device settings with two-way communication

Remotely initiate over-the-air firmware updates using cellular

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Spotter Specifications

Specifications

Dimensions	Width: 42 cm (16 in), Height: 31 cm (12.2 in)
Weight	7.45 kg (16 lb 7 oz)
Connectivity	Satellite (Iridium SBD) and Cellular
Primary Power Source	Solar-powered, 5× 2 Watt, 6 Volt solar panels
Battery	Rechargeable lithium-ion 13,400 mAh capacity, 3.7 Volts

Motion Sensing

Motion Data Format	Easting (mm), northing, elevation, latitude, longitude
Wave Frequency Range	0.03 - 0.8Hz (30s - 1.25s)
Wave Direction Range	0 - 360°
Sampling Rate	2.5Hz
Wave Displacement Accuracy	Approximately ±2cm accuracy depends on field of view, weather conditions, and GPS system status

Additional Onboard Sensors

Sea Surface Temperature (SST)	Accuracy Resolution Range	±0.1°C absolute ±0.02°C -5°C - 50°C
Barometer	Accuracy Range	±0.5mbar at 25°C 700 - 1100mbar

Data Outputs

	Standard Mode	Spectrum Mode	On Device
Significant Wave Height	●	●	●*
Peak Period	●	●	●*
Mean Period	●	●	●*
Peak Direction	●	●	●*
Mean Direction	●	●	●*
Peak Directional Spread	●	●	●*
Mean Directional Spread	●	●	●*
Variance Density Spectrum	○	●	●
Directional Moments (a1, b1, a2, b2)	○	●	●
3D Displacement Time Series @ 2.5 Hz (x,y,z)	○	○	●
Sea Surface Temperature (SST)	●**	●**	●**
Barometer	●	●	●
Wind Speed	●	●	○
Wind Direction	●	●	○
Drift Speed	○	○	●*
Drift Direction	○	○	●*
Geographical Coordinates (lat, lon)	●	●	●

*Can derive from SD card data.   **SST is not available with Smart Mooring

Data Storage

On-board (SD Card)	Records time series of 3D displacement data, ships with 16GB SD card (supports up to 2TB, FAT32 format required)
Cloud Storage (Online Dashboard)	Online account includes real-time and historical data outputs, Spotter configurations, alerts, maps, and two-way communication

Misc. Specifications

System Monitoring	Battery voltage, solar panel power, internal humidity
Advised Mooring Depth	5 - 300m
Visbility Light	.5s flash every 2.5s (configurable), minimum 1 mile visibility in normal conditions
Firmware Updates	USB-C and over-the-air updates (cellular only)
Usability	Physical on/off switch, run/idle magnetic toggle, user LEDs and integrated grab handles

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Spotter with Smart Mooring

A flexible solution for real-time surface and subsurface sensing. Smart Mooring anchors the Spotter buoy to the seafloor and extends its data collection capabilities underwater, measuring subsurface temperature, water level, current, and more.
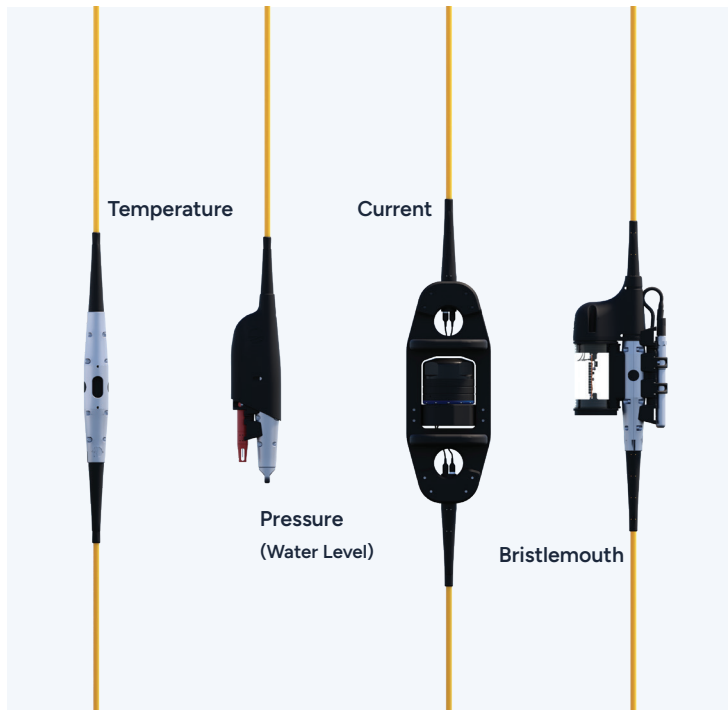

Seamless Data Access
Remotely view and download subsurface observations using the Spotter Dashboard and API.

Start Sensing Immediately
Purchase a pre-built Smart Mooring to measure subsurface temperature, water level, and currents out-of-the-box.

Adaptable and Durable Design
Equip Smart Mooring with up to to three underwater payloads. Deploy to depths of up to 50 m. Cables are extremely resilient and available in variable lengths.

Build Custom Solutions
Integrate additional off-the-shelf sensors and devices using the Bristlemouth open ocean connectivity standard.

Smart Mooring Nodes

Smart Mooring is fully modular with interchangeable architecture. Add variable payloads to three nodes at different depths. Measure subsurface temperature, water level, and currents out-of-the-box, or build a custom solution with Bristlemouth.

Example Configuration

Smart Mooring is equipped with three compatible temperature sensors. This example configuration creates a temperature profile and provides real-time temperature gradients at the surface, midwater, and seafloor.
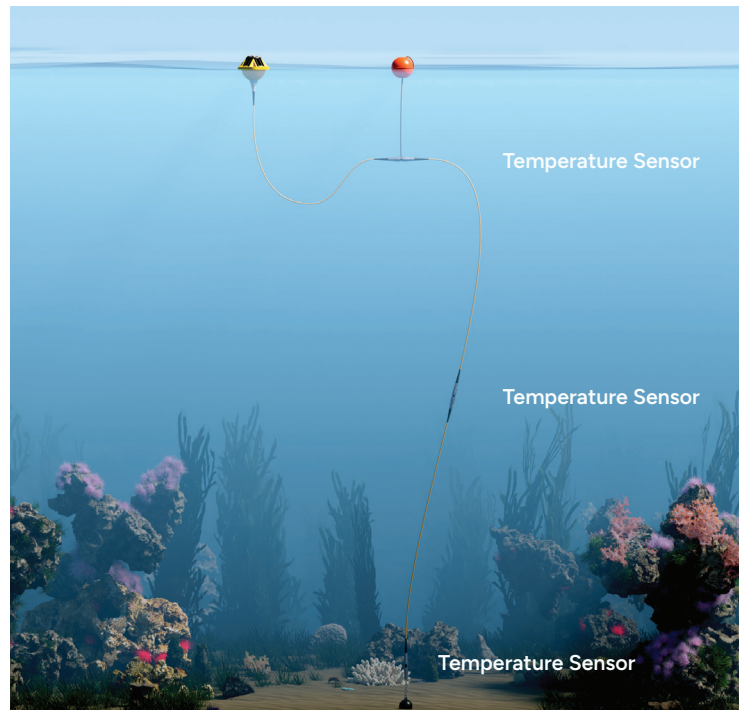
Smart Mooring Specifications

General Specifications

Available Cable Lengths	5m, 10m, 20m, 25m, 35m, 50m
Jacketing	Thermoplastic polyurethane, high-visibility yellow, UV stabilized, biofouling resistant
Diameter	14.5mm
Reinforcement	Kevlar braid
Conductors	2-conductor, 16 AWG (power + data)

Usage Guidelines

|	
Maximum Working Load[*]	1,780 N (~400 lbf)
Winch/Capstan Use[*]	Tested for 200+ continuous cycles over a 4.25" sheave with a 3" capstan with a weight of 450lbs.
Maximum Depth	50m

*Maximum working load and winch/capstan use guidelines are calculated and tested using new cables. Repeated use and the various mooring configuration and environmental considerations may alter these guidelines. Have a question? Contact support@sofarocean.com

Compatible Payload Specifications

Temperature Sensor

Payload	Sofar Temperature Sensor
Accuracy	±0.1°C
Resolution	0.02°C
Range	-5°C - 50°C
Payload	RBRcoda³ T: Temperature Sensor
Accuracy	±0.002°C
Resolution	<0.00005°C
Range	-5°C - 35°C
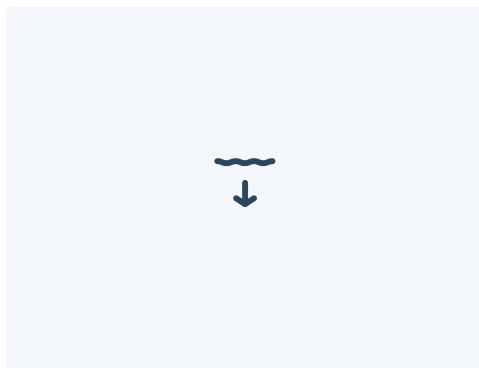
Pressure Sensor

Payload	RBRcoda³ D: Pressure Sensor (depth)
Calibration Depths	20dbar, 50dbar
Accuracy	±0.05% full scale
Resolution	<0.001% full scale
Frequency	2Hz
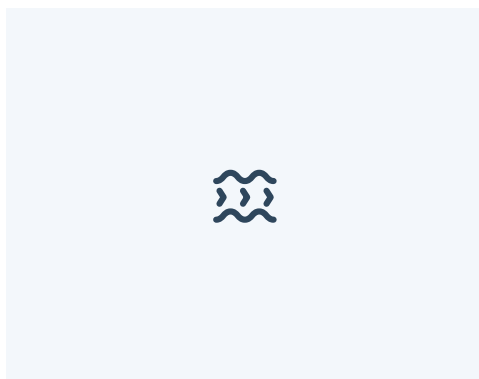
Current Meter

Payload		Aanderaa 4830 ZPulse® Doppler Current Sensor (DCS)
Current Direction	Accuracy:	±5° for 0 - 15° tilt | ±7.5° for 15 - 35° tilt
	Resolution:	0.01°
	Range:	0 - 360° magnetic
Tilt Circuitry	Accuracy:	±1.5°
	Resolution:	0.01°
	Range:	0 - 35°
Water Velocity	Mean Accuracy:	±0.15cm/s
	Resolution:	0.1mm/s
	Range:	0 - 300cm/s
		(0 - 100cm/s max when deployed)
Temperature	Accuracy:	±0.1°C
	Resolution:	0.01°
	Range:	-5°C - 40°C

Spotter Platform with Smart Mooring
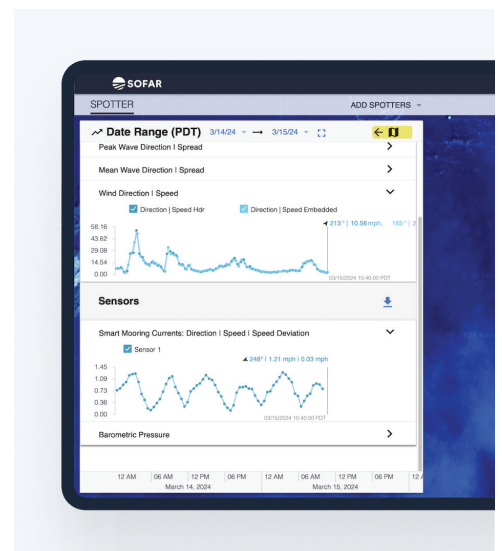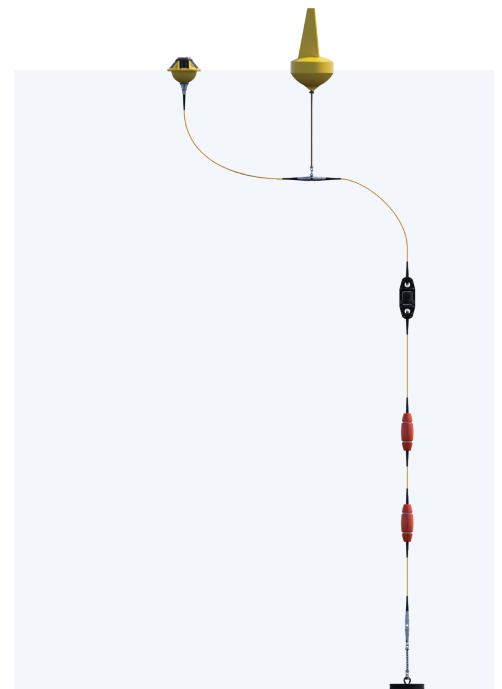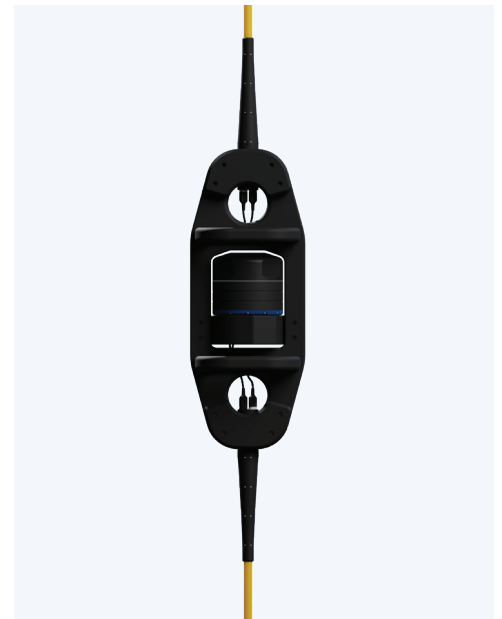
Current Meter

Spotter with Smart Mooring makes it easier than ever before to measure current in real-time. Our current payload integrates seamlessly with Smart Mooring's Bristlemouth-enabled nodes, enabling you to measure current speed and direction at up to two points in the water column right out of the box. Access accurate data instantly using the Spotter Dashboard and API — no integration needed.

Payload Specifications

Payload	Aanderaa 4830 ZPulse® Doppler Current Sensor (DCS)	
Current Direction	Accuracy	±5° for 0 - 15° tilt | ±7.5° for 15 - 35° tilt
	Resolution	0.01°
	Range	0 - 360° magnetic
Tilt Circuitry	Accuracy	±1.5°
	Resolution	0.01°
	Range	0 - 35°
Water Velocity	Mean Accuracy	±0.15cm/s
	Resolution	0.1mm/s
	Range	0 - 300cm/s (0 - 100cm/s max when deployed)
Temperature	Accuracy	±0.1°C
	Resolution	0.01°
	Range	-5°C - 40°C
Operating Temperature	-5°C - 50°C	

Usage Guidelines

Configuration Options	Best for moored coastal deployments of one Spotter platform or a distributed network. Integrate up to two current payloads per Smart Mooring, plus additional payloads like temperature and water level (max 3 total).
Real-time Data	Configurable sample rates and windows. Sensor data is stored onboard and can be sent over satellite or cellular network to the Spotter Dashboard and the Sofar API.
User Controls	Directly via Spotter Dashboard or binary/ASCII commands. Remotely via Sofar support.
Maximum Operational Conditions	50m Depth, 100cm/s Current Velocity

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Spotter Platform with Smart Mooring

Pressure Sensor

Spotter with Smart Mooring makes it easier than ever before to measure water level. Pre-equip your device with a compatible pressure payload to start sensing out-of-the-box. The pressure payload integrates seamlessly with other Bristlemouth-enabled payloads, like Spotter's on-board Barometer, enabling atmospheric corrected water level readings in real-time.

Payload Specifications

Payload	RBRcoda³ D: Pressure Sensor (depth)
Diameter	25mm
Calibration Depths	20dbar, 50dbar
Accuracy	±0.05% full scale
Resolution	<0.001% full scale
Frequency	2Hz
Typical Stability	±0.05% full scale / year

RBRcoda³ T.D: Temperature & Pressure (depth) *is also available, providing both measurments on a single device*

Usage Guidelines

Configuration Options	Best for moored coastal deployments of one Spotter platform or a distributed network. Integrate up to two additional payloads per Smart Mooring like temperature and current (max 3 total).
Real-time Data	Configurable sample rates and windows. Sensor data is stored onboard and can be sent over satellite or cellular network to the Spotter Dashboard and the Sofar API.
User Controls	Directly via Spotter Dashboard or binary/ASCII commands. Remotely via Sofar support.
Maximum Depth	50m

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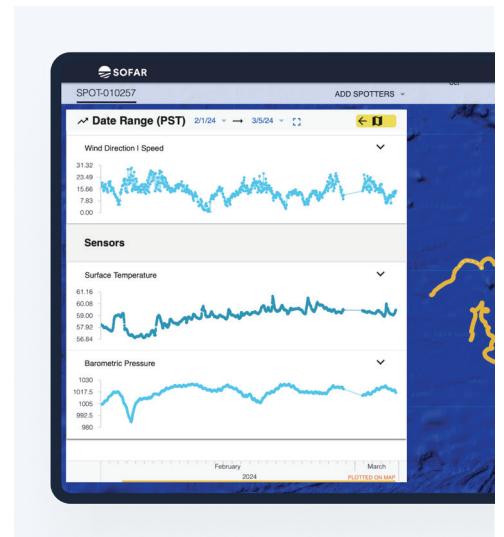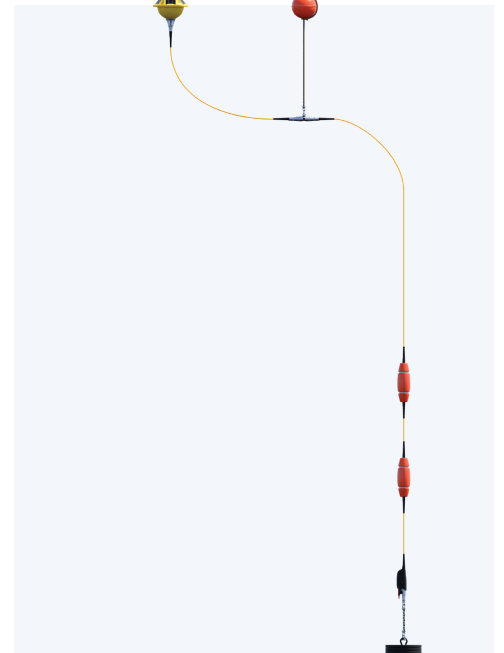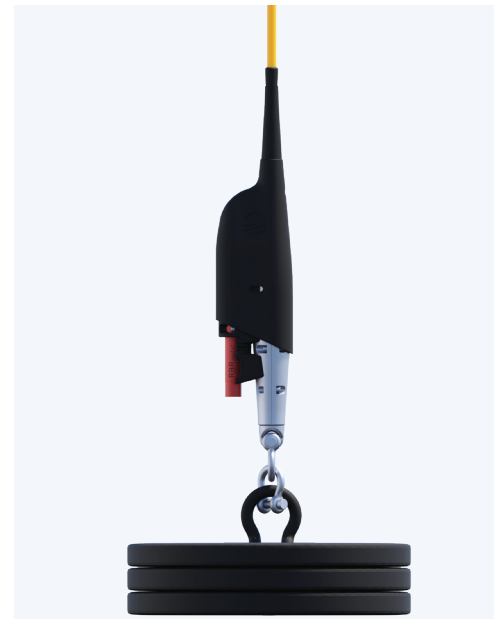
Spotter Platform with Smart Mooring

Temperature Sensor

Spotter with Smart Mooring makes it easier than ever before to measure subsurface temperature. Pre-equip your device with a compatible temperature payload to start sensing out-of-the-box. The temperature payloads integrate seamlessly with Smart Mooring's Bristlemouth-enabled nodes and deliver accurate measurements in real-time.

Payload Specifications

Payload	Sofar Temperature Sensor
Accuracy	±0.1°C
Resolution	0.02°C
Range	-5°C - 50°C

Payload	RBRcoda³ T: Temperature Sensor
Accuracy	±0.002°C
Resolution	<0.00005°C
Range	-5°C - 35°C

RBRcoda³ T.D: Temperature & Pressure (depth) *is also available, providing both measurments on a single device*

Usage Guidelines

Configuration Options	Best for moored coastal deployments of one Spotter platform or a distributed network. Integrate up to two additional payloads per Smart Mooring like pressure and current (max 3 total).
Real-time Data	Configurable sample rates and windows. Sensor data is stored onboard and can be sent over satellite or cellular network to the Spotter Dashboard and the Sofar API.
User Controls	Directly via Spotter Dashboard or binary/ASCII commands. Remotely via Sofar support.
Maximum Depth	50m