



SOUNDNINE INC

*Helping build successful
monitoring systems*

Ulti-Buoy

Real-time Temperature Chain

The S9 Ulti-Buoy transmits high accuracy temperature measurements from multiple depths via cellular or Iridium satellite telemetry and delivers data directly to the users' desktop via S9's cloud-based data server. The Ulti-Buoy system consists of a small robust spar buoy with wire rope mooring, solar powered buoy controller with GPS and telemetry modem, S9 X-TP Temperature, Pressure (optional) and tilt sensors, and free software.

Users need only to deploy the buoy and view and manage data with provided software. The cloud data service is included free for three years. Cellular or Iridium telemetry service can also be provided by Soundnine providing a total single-source solution.

The self-powered X-TP sensors sample simultaneously at a programmable interval, and transmit their data to the Ulti-Buoy controller via inductive telemetry which uses the mooring wire as the data transmission medium, eliminating underwater cables and connectors. Hundreds of sensors may be installed on the wire and users can position/re-position them to increase resolution through the thermocline or other points in the water column.

The buoys' low-drag spar design reduces its response to wave forcing, making it well suited for water bodies with short-length choppy waves. It withstands rough weather, moving up and down in the water and adjusting to changing dynamic loads more gradually than a disc-shaped buoy, creating a stable measurement platform and reducing wear and fatigue on the mooring, prolonging its service life.

The Ulti-buoy is designed to withstand repeated submergence for prolonged periods of extreme wind and wave conditions (storms), while continuing to log temperature profiles. Any data transmissions interrupted or delayed if the buoy is submerged, are stored and automatically transmitted when the telemetry link is regained.



Buoyancy is adjusted to suit payload and expected wave conditions by varying the number of stacked weights on the tail section. Larger hull sizes are available to support larger payloads and/or deeper moorings and more dynamic environmental conditions.



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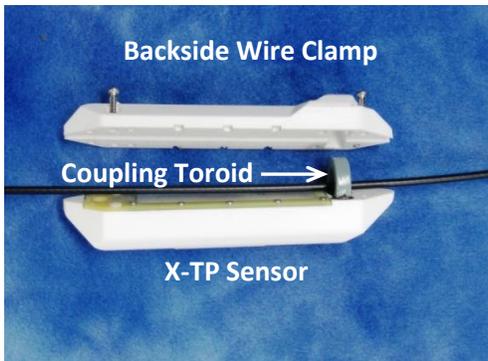


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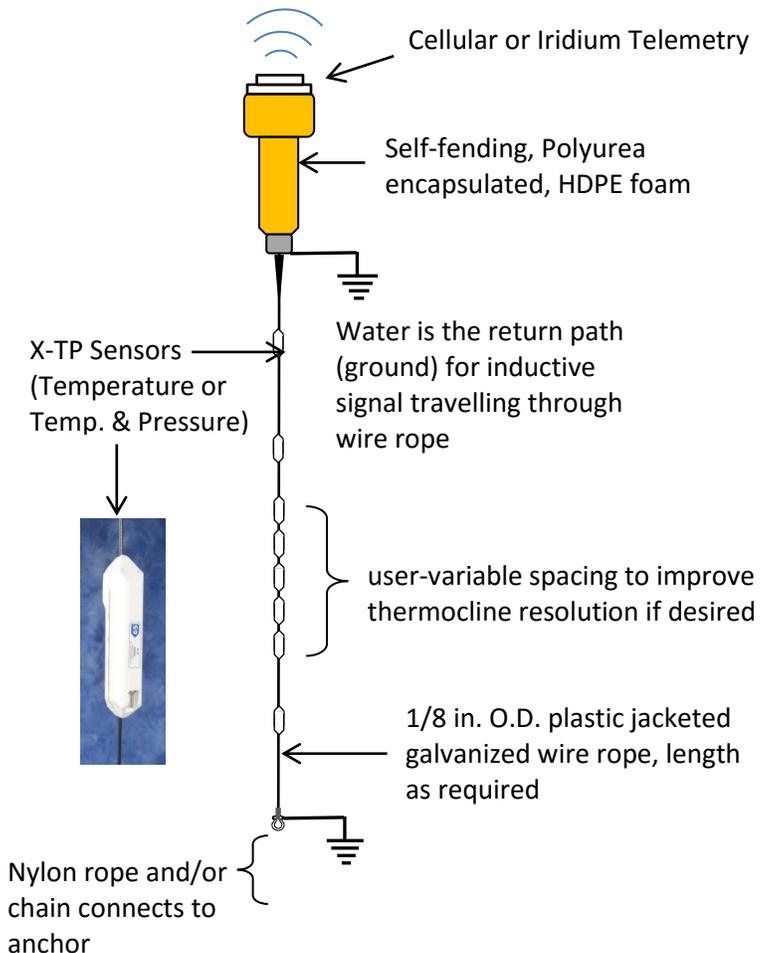
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Soundnine pre-installs X-TPs on the wire by inserting the end of the wire rope through their coupling toroids, sliding the sensors to the desired positions and securing in place with a backside wire clamp, before the wire termination is made. Users can re-position sensors at different depths to suit new measurement requirements by loosening clamp screws, sliding sensors to different positions and re-tighten the wire clamps.



Specifications:

Power: controller & wireless telemetry: Solar charged Li-ion battery

Endurance: controller & wireless telemetry: More than 5 years

Inductive telemetry: over 2000 meters at 1200 baud. No functional limit to the number of sensors on the wire

Sensors: Soundnine X-TP Temperature (pressure optional) and Tilt sensors with inductive telemetry.

Accuracy / Endurance: $\pm 0.005^\circ \text{C}$ / 3 years sampling every 10 minutes.

(see separate X-TP data sheet for more detailed specifications)

Dimensions: 25 cm (10 in.) Dia. x 112 cm (44 in.) Long

Buoy Weight: (adjustable) 11-13 kg (24-29 lbs.) in air

Payload weight (in water): 3.3 kg (7.3 lbs.) = 24 X-TP sensors & 100 m 3/32 in. wire rope (1/8" jacket O.D.)
or: 4.9 kg (10.8 lbs.) = 5 X-TP sensors & 200 m 3/32 in. wire rope

Mooring wire breaking strength: 418 kg (920 lbs.) (heavier wire available with larger buoys)



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