

## **Oceanetic 908 Drifter Buoy Sensor Description**

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The 908 thermistor buoy is equipped with five thermistors in oil-filled hydraulic hose, and is meant to be embedded in sea ice with the thermistors frozen in, where they can measure ice temperature. The thermistors are at 50 cm intervals, with the upper one just below the surface of the ice, and the lowest one 2 metres below the surface. Those thermistors have a factory calibrated accuracy of 0.1 C, and may optionally calibrated to 0.01 C accuracy at Oceanetic. The buoy also has a thermistor in its top cap, which is situated 50 cm above the ice surface when the buoy is deployed.

The buoy is roughly 5" in diameter, and 1 metre long, with the thermistor string exiting the side of the case just above the ice surface. When deployed, the buoy rests on three short arms which hold it at the proper level with reference to the ice surface. It is equipped with a replaceable 9.6V alkaline battery pack of 108 AH capacity, which is derated for cold temperatures to 70 AH. The battery pack on 908 buoy manufactured after 2013 are equipped with a water leak detector on the bottom of the pack.

The buoy communicates using the Iridium satellite network, which provides near real-time transmission of data. Typically, the buoy wakes once per hour, takes a temperature sample from all six thermistors, as well as a GPS location. That data is packaged into a short binary packet which is sent via Iridium satellite to an email account or accounts, where the data can be monitored and decoded, providing position and temperature data. Oceanetic can provide a decoding service which automatically decode the binary packets and send the decoded data via email. Other diagnostic information is also embedded in the message, and the buoy wakes briefly once per minute to check for leaks. Should a leak be detected, an immediate transmission is made so that a damaged, leaking buoy can give a warning before it fails completely.

The Iridium satellite network provides two-way communications, and the 908 Thermistor buoy is able to receive messages which can query the status of the buoy, and change operating parameters such as the frequency of temperature sampling. At a one-hour sample rate, the buoy has enough battery capacity to broadcast for at least a year. The sample rate may be reduced to extend the battery life.