

# APT Sensor and Inductive Modem



Soundnine (S9, USA) is to launch two products at Ocean Business 2015: the Enduro APT Recorder and Ulti-modem inductive modem. With high-accuracy sensors and advanced real-time underwater telemetry, they offer new capabilities and value in ocean observing.

The Enduro APT Recorder is a uniquely small, robust instrument that measures acceleration, pressure and temperature, logs internally and transmits data in real time over plastic-jacketed wire rope commonly used on moorings. S9's dual mode inductive technology is fully compatible with the prevailing inductive telemetry (Sea-Bird), and also offers a fast transmit mode when communicating with an Ulti-modem.

The size and power requirements of the Enduro were reduced by using electronic technology that is also found in cell phones. This enabled a more compact mechanical design with low manufacturing cost, and allowed more design detail to be devoted to solving problems experienced using other moored sensors. The Enduro is easily held in one hand during mooring assembly and installs concentrically on the mooring wire in seconds using a cordless driver. Its tapered shape reduces dynamic stress on the mooring and fends off fishing lines or debris that might otherwise snag the instrument.

## Ulti Modem

The modem used in the Enduro is also built into the Ulti-modem, a clamp-on-the-wire companion module that adapts most instruments having a serial interface to real-time inductive telemetry. The Ulti-modem is also used with S9s DANTE Buoy Controller or common data loggers to communicate with other Ulti-modems, Enduro APT Recorders or Sea-Bird inductive modems on the same mooring wire.

The Ulti-modem's fast transmit mode is capable of data rates up to 19.2 kBaud between Ulti-modem-equipped instruments, depending on wire length.

## Research Possibilities

Perhaps most intriguing are the possibilities for new research yet to be conducted with the Enduro APT Recorder and Ulti-modem. It's now possible to obtain real-time profiles of the upper few hundred meters of the ocean from a small boat towing a string of inexpensive sensors on ordinary jacketed wire rope, sampling temperature, pressure and tilt at 12 or more times per second. Moorings will be able to send data about the frequency and intensity of strumming, and indicate anchor movements that may impact the safety of the mooring. With this advance warning, researchers may be able to intervene, preventing huge losses in equipment and data.