



The leading **designer** and manufacturer of

**surface  
drifters**

## ClearSat-15-III - The Next Generation WOCE and WOCEB Drifter



drifter is easier to handle on shipboard and costs less to ship. Additional improvements include the new ClearSat-3.0 controller that operates sensors, formats data messages and drives the satellite data system you select: Iridium SBD or Argos. The ClearSat-3.0 runs at 3-volt for lower power consumption and features enhanced power management. A strain gauge mounted in the surface float near the tether attachment reliably senses drogue presence.

**A** drifter consists of a surface float from which is suspended on polypropylene-coated steel wire a holey-sock drogue (sea anchor). The ClearSat-15-III features a high drag-area ratio for the drogue centered at 15 meters compared to the surface float and tether; a high drag-area ratio is the design principal of WOCE drifters (like our ClearSat-15) which made it the touchstone for surface current studies. Field studies and numerical simulations have shown that high drag-area ratio minimizes slip, the velocity of the drifter relative to the layer that is being tracked. In the ClearSat-15-III the smaller surface float and redesigned tether and stress reliefs allow the drogue to be reduced in size so that it measures 0.6-m. (2.0-ft.) diameter by 5-m. (16 ft.). The surface float contains the electronics, transceiver an-

tenna and alkaline battery pack. A sea surface temperature probe is standard equipment. Options include other drogue depth centering, atmospheric pressure, air temperature, salinity, PAR, and upwelling light, as well as GPS (Global Positioning System) locations made every 2, 1, 0.5, or 0.25 hour.

**W**e offer two global satellite data communications options. Argos and Iridium SBD. The NAL Research 9601 Iridium modem coupled with precise GPS locations provide on-demand sampling with immediate availability of environmental data. The Argos system operated by Service Argos/CLS provides accurate drifter locations for environmental information coupled with reliable data dissemination. A ClearSat-15-III equipped with the Kenwood T-2071 can transmit over the entire Argos band. This ensures excellent Argos coverage, even in areas heavily populated with other Argos PTTs. While over 1-year operation is possible at continuous Argos transmission, even longer periods are possible with the T-2071 by reducing power to 0.5 Watt. Look for implementation of the Argos 3 PMT in 2007 for higher data rates, remote control of sampling mission, and enhanced power management.

**T**he ClearSat-15-III is Clearwater's third generation WOCE drifter which has been totally redesigned to reduce weight, complexity and cost. The WOCE drifter, standard for surface mixed layer velocity measurement and autonomous ocean sensor platform, is now better and more affordable. Because it is smaller and weighs less (19 Kg for the ClearSat-15-III compared to 31.9 Kg for the original WOCE specification), the

### Technical Specifications:

Hull	30.5 cm. (12 in) diameter durable ABS sphere: weight in air 12 kg (26 lb).
Drogue	0.6m (dia) x 5 m four-section holey sock at 15 m depth 40:1 drag area ratio: weight in air 7 kg (16 lbs.).
Tether options	30, 40, 50 m drogue center.
Power supply	13.5 V 56 Ah, alkaline pack; 1.5 year life with continuous Argos transmit, longer with other duty cycles.
RF Output:	1.0 +/- 0.3 Watts into 50 Ohms. (Kenwood YT2071 Argos PTT. Argos bands S1 - S14, L1 - L3. Option to transmit at 0.5 Watts for longer service). 1.6 Watts into 50 Ohms (NAL Research 9601 Iridium transceiver).
SST	: -5.0 to 45.0 +/- 0.1 C. 10-bit resolution with standard calibration:
Barometer	610 TO 1090 +/-0.3 mB, -5 TO 45 C calibrated sensor. DBCP M2 data format.
GPS	Latitude, longitude +/- 0.00005 deg. Precision; positioning every 2, 1, 0.5, or 0.25 hour.
Environmental	-50 to 30C storage; -5 to 45 C operation.

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