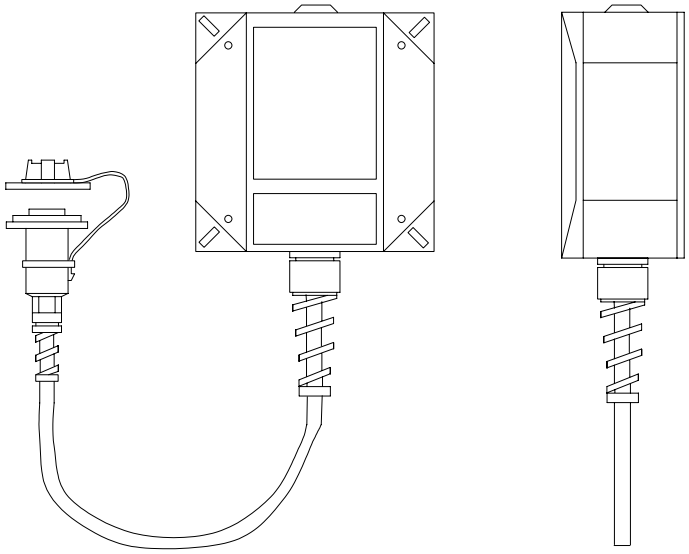
Yacht Based Wave Height Sensor



The Yacht Based Wave Sensor is a small (0.12 x 0.12 x 0.07m), robust (IP66) unit designed particularly for use on sailing vessels where a significant amount of heel will be experienced during normal operation. The unit has two main functions:

- The first is to calculate the significant wave height (the average of the 1/3 highest waves), significant wave height period, and the maximum wave height and period over a time of up to 2 hours.
- The second is to provide the wave profile (as seen by the motion of the passage of the boat) at a rate of 5Hz.

The unit, secured by four screw holes, should be positioned on the vessel centre line between $^{2}/_{3}$ and ¾ of the length back from the bow, and between the water line and 0.5m below close to the centre of roll, where it will not be subjected to the extremes of temperature or moisture.

The unit is communicated with via a single 25-way connector (only 7 pins used), which is used to supply power and communication with a host computer via an RS-232 interface. The unit may be field upgrade-able with software updates if and when they become available via an additional cable (not supplied with basic unit).

The vessel's shape and sea keeping characteristics form a filter to the seas actual movement. Therefore, the heave response, unique to the particular application has to be derived either by calculation (less accurate) or by on-board testing (more accurate) and programmed into the Wave Height Sensor. Because of this the sensor may not be transferred from vessel to vessel without consulting the manufacturers for any necessary updates. The accuracy of the significant wave height can be between 0.5m and 0.06m, but this depends on the size of the vessel and the accuracy of the heave response.

The Yacht Wave Height Sensor has been in use on all of the 2001/2002 Volvo Ocean Race VO.60 yachts competing. Live data summaries could be viewed on-line at http://www.volvooceanrace.org. During the first few days of the race the height was compared with data available from the UK Meteorological Office for the UK waters and proved to be accurate.

A number of different options can be made available for the unit which include:
- Ethernet, NMEA or Seatalk interfaces
- Deeper memory and data logging functions
- Palm-Pilot Dashboard and data logging

Specification

Physical:	
Size:	120 x 120 x 75 mm
Weight:	1kg
IP Rating:	IP66
Power:	
Voltage:	11.5 to 30V DC (normally 24V)
From Cold:	5.2W
With Stabilizing Heater:	3.9W
Normal:	2.6W
Fuse:	Self-Resetting, Trips @ 0.5 Amp
Host Interface:	
Electrical:	RS232, Tx, Rx, Signal Return, No Flow Control
Speed:	9600bps, 8 Data, No Parity, 2 Stop Bits, No Flow Control
Message Format:	Binary Message Based, Host - Master, Sensor – Slave, CRC Validated
Accuracy:	Between ±0.06m and ±0.5m depending on the accuracy of the Heave Response and the size of the vessel.

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