

## WaveSense 3

### Integrated Data Logger and Wave Sensor

#### DESCRIPTION

The Fugro OCEANOR Wavesense is an inertial sensor measuring the motion of a buoy floating on the ocean surface. Time series of 3-dimensional buoy motion and wave parameters like height, period, direction and a number of other parameters are the outputs of the sensor.

The sensor is integrated into Fugro OCEANOR's datalogger Geni 3and can thus be directly interfaced to a number of sensors and communication devices.

The sensor is tailor made for wave measurements, which gives it a number of advantages compared to other more general purpose motion sensors on the market. The most important are:

- Low power consumption
- Integrated into the datalogger
- Low price
- Direct output of standard oceanographic wave parameters and statistics



#### PRINCIPLE

WaveSense is a solid state inertial motion sensor. The sensing elements are accelerometers, angular rate sensors, magnetoresistive sensors and temperature sensor for compensating temperature effects

#### WAVE SENSOR SPECIFICATIONS

##### HEAVE, SURGE AND SWAY

Range: -20 to +20 m <sup>(2)</sup>  
Resolution: 0.01 m <sup>(2)</sup>  
Accuracy: 0.1 m  
Period: 1 – 30 seconds

##### ROLL AND PITCH

Range: -90 to +90°  
Resolution: 0.05 deg. <sup>(2)</sup>  
Accuracy: 0.2 deg. rms  
Period: 1 – 30 seconds

##### WAVE HEIGHT

Range: 0 – 20 m <sup>(2)</sup>  
Resolution: 0.01 m <sup>(2)</sup>  
Accuracy: 0.05 m <sup>(1)</sup>

##### WAVE PERIOD

Range 1 – 30 s  
Resolution: 0.1 s <sup>(2)</sup>  
Accuracy 0.15 s <sup>(1)</sup>

##### WAVE DIRECTION

Range 0 – 360 deg.  
Resolution: 0.1 deg. <sup>(2)</sup>  
Accuracy 1 deg. <sup>(1)</sup>

Calibration: Factory (3 year intervals)

<sup>(1)</sup> Based on intercomparison tests

<sup>(2)</sup> User configurable

## DATA LOGGER SPECIFICATIONS

### Sensor inputs/outputs

- 16 Differential analog inputs. 16 bit resolution, +/-5V range. Optional inputs are 0-20 mA, PT-100 and other resistance based sensors are also supported
- 18 RS-232, 1 RS-485 and 2 RS-422
- 1 Frequency in
- 26 digital in/out
- 11 lines for sensor power supply.

All ports are ESD protected and the serial ports are capable of up to 250 kbit/s transfer rates.

Virtually all sensors on the market today fit directly or with small adaptations into one of the above categories.

### Storage Capacity

CPU Board:

- 512 Mb Flash memory (CompactFlash) for data storage (can be extended on request)
- 32 Mb of Flash memory for program storage
- 64 Mb of SDRAM for system software

### Miscellaneous

Battery backed Real Time Clock. Initial accuracy 1 min./month. Automatic correction when GPS is available.

PXA255 XScale RISC processor running at 400 MHz.

### Software

- Linux 2.6 operating system
- Fugro Oceanor modular software for data acquisition, data analysis, data storage and transmission.

### Communication options:

- Argos
- Inmarsat-C
- IRIDIUM
- GSM telephone
- GPRS
- UHF/VHF
- Serial line (proprietary or PPP protocol) over any of the serial ports
- 10/100base-TX Ethernet
- WLAN

### Configuration

The system is configured through an easy to use program running on a PC under MS-Windows 95/98/NT/2000/XP/Vista. New configurations may be uploaded to the system via any of the communication options above (except Argos). Program upgrades may also be performed remotely.

## GENERAL SPECIFICATIONS

Supply current:	160 mA (active, inc. network) 110 mA (active, no network) 250 mA (no network, wave acquisition active) 75 mA (idle)	Operating temp:	-5 to +70 °C
Supply Voltage:	7 to 15 VDC	Size:	177 x 133 x 111 mm
		Weight	2.4 kg
		Shock resistance	1000 m/s <sup>2</sup>