

TRIAXYS™ DIRECTIONAL WAVE BUOY

FEATURES & BENEFITS:

- Spin and impact resistant
- Reliable operation in extreme weather or geographical locations
- 5 year rechargeable battery life
- Supports any telemetry
- >5 years of data storage capacity
- Continuous wave sampling



The TRIAXYS™ Directional Wave Buoy now uses the TRIAXYS™ Next Wave Sensor for continuous wave sampling and reliable wave data.



TRIAXYS™

**DIRECTIONAL
WAVE BUOY**

A Revolution in Wave Measurement

TRIAXYS™

Directional Wave Buoy

The TRIAXYS™ Directional Wave Buoy precisely measures directional waves and is easy to use. The sensor unit is comprised of three accelerometers, three rate gyros, a Fluxgate compass and the proprietary TRIAXYS™ Processor. Economical and rugged, the TRIAXYS™ Directional Wave Buoy can withstand the rigours associated with deployment and recovery operations, specifically: impact shock, spinning, and temporary submergence. The buoy's spun stainless steel hull has a high strength to weight ratio and corrosion resistance, and provides secure mooring and lifting points. The buoy's modular components are easily accessed by removing the polycarbonate dome. The clear dome allows sunlight to reach the solar panels, while maintaining a low profile and impact resistance. The buoy is solar powered with rechargeable batteries to reduce annual operating costs. The buoy can operate for years before the batteries need replacement.

The heart of the TRIAXYS™ Directional Wave Buoy is developed from the AXYS WatchMan500™ controller, which integrates sensor systems and provides onboard data processing, data logging, telemetry, and diagnostic/set-up routines. Full directional wave spectra is computed by the CHC maximum entropy method. Mean wave direction and spreading width are computed as functions of frequency. The software also performs a zero-crossing analysis to compute various time-domain wave parameters. The onboard computer uses an iterative algorithm based on Fast Fourier Transform analysis to solve the full non-linear equations of motion in six degrees of freedom, as measured by accelerometers and angular rate gyros. The buoy is capable of accurate motion data for roll and pitch angles up to 60 degrees. Surge and sway velocities measure wave kinematics that define directional wave properties.

The removal of an external magnetic key activates the buoy. Set-up and communication with the TRIAXYS™ Directional Wave Buoy takes place through the dome via the infrared port, mitigating the need to remove the dome. All the set-up parameters and buoy activity can be adjusted and monitored using this port; enabling easy field configuration and testing.

The data transmitted from the buoy can include wave statistics, HNE (Heave, North and East Displacements), MeanDir (Wave Direction and energy as a function of frequency), directional and non-directional wave spectra, buoy configuration, status data, position and WatchCircle™ alarm messages. All data is stored on the internal data logger.



Specifications

- Physical Description**
Diameter: 1.10m (43.5 inches) outside bumper
 0.91m (36 inches) hull
Weight (including four batteries): 197 kg (435 lb)
Weight (excluding batteries): 90 kg (199 lb)
Obstruction Light: Amber LED. Programmable ODAS flash sequence with three miles visibility.
- Materials**
Hull: Stainless steel
Dome: Impact resistant polycarbonate
Solar Panel Assembly: Fibreglass over foam
Clamping ring: Stainless steel
- Sensors/Processor**
Processor: WatchMan500™
Water temperature: Thermilinear composite network
Accelerometers: Flexure suspension servo (Range $\pm 2g$)
Rate: Piezoelectric vibrating gyroscope (Maximum angular velocity $\pm 80^\circ/s$)
GPS: 12 channel
- Power System**
Operational system voltage: 11.0 to 19.6 VDC
Batteries: 4 @ 12 Volt, 100 Amp hr/battery
Solar Panels: 10 @ 6 Watt
Smart Charger: Sunsaver-6
External On/Off Switch: Turns buoy on when Magnetic Key is removed.
- Telemetry Options**
 - VHF
 - INMARSAT D+
 - IRIDIUM
 - CDMA, GPRS (cellular)

Resolution/Accuracy

| | Range | Resolution | Accuracy |
|-------------|-------------------|------------|-------------------|
| Heave | ± 20 m | 0.01 m | Better than 2% |
| Period | 1.5 to 33 seconds | 0.1 sec | Better than 2% |
| Direction | 0 to 360° | 1° | 3° |
| Water Temp. | -5 to +50°C | 0.1°C | $\pm 0.5^\circ C$ |

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