AXYS TECHNOLOGIES INC.

TRIAXYS™ g3

The TRIAXYS g3 wave sensor accurately & reliably measures wave statistics and directional wave spectra.

FEATURES & BENEFITS

- Low power consumption
- Small, simple enclosure
- Continuous wave data output
- Waves are processed for full wave spectrum as well as user specified frequency ranges
- Configurable data outputs based on program requirements
- Optimized messages for low telemetry costs
- >5 years data storage capacity

TRIAXYS g3 Wave Sensor

The TRIAXYS g3 sensor processes wave data onboard. TRIAXYS g3 calculates industry standard wave statistics and also generates the spectral data as a complete set of Fourier coefficients and energies. The sensor can easily be integrated with a buoy controller to transmit data in real time. All sensor data is stored on a fault tolerant microSD card for easy post-processing.

The TRIAXYS g3 wave sensor is comprised of an industrial-grade inertial measurement unit (IMU) that uses high performance triaxial accelerometers, gyroscopes and magnetometers to measure platform motion and orientation.

The sampling regime for the sensor is easily configurable for any wave sensing application. For operationally-driven scenarios it is possible to configure the sensor for continuous wave measurements with sliding window data processing.

The TRIAXYS g3 wave sensor enables clients to process wave data over three configurable frequency ranges. These ranges can be set to isolate different wave types as defined by the customer.

The TRIAXYS g3 wave sensor can be located anywhere on the floating body to measure motion at a specific point to calculate the motion at another point on the body.

Software

The processor in the TRIAXYS g3 wave sensor uses the measured sensor motions to perform wave analyses which include:

- a zero crossing analysis of the wave elevation record to produce time domain wave statistics.
- a spectral analysis that computes the frequency domain wave statistics and the non-directional wave spectrum, which defines the distribution of wave energy as a function of frequency.
- a directional spectral analysis, using the wave elevation and the north and east velocity components, that computes the directional wave spectrum. This defines the distribution of wave energy as a function of frequency and direction of propagation.
- calculation of the mean wave direction and the directional spreading width as functions of frequency.
- first 4 Fourier coefficients which can be used to reconstruct the directional spectra for analysis by your software and algorithms.

Specifications

- PHYSICAL DESCRIPTION
  Size: 3cm x 8cm x 8.5cm
  Weight: 0.15 kg
  Enclosure Material: Powder coated aluminum
- DATA OUTPUTS
  Wave Statistics
  Frequently used wave stats include (but are not limited to): Max Wave Height/Period, Significant Wave Height/Period, Average Wave Height/Period, Peak Period, Mean Wave Direction, Mean Spread, etc.
  Wave Spectra
  The directional wave spectra (energy & Fourier coefficients vs frequency) is available in 3 formats, utilizing 32, 64 and 123 frequency bins
- SAMPLING
  Sampling Frequency: 4Hz
  Measurable Frequency Range: 0.64Hz (1.56 seconds) to 0.030Hz (33.33 seconds)
  Sample Duration: Configurable
  Sampling Interval: Configurable
- POWER SYSTEM
  Power Supply: 5 to 35 VDC
- DATA
  Communications: Serial (RS-232) & USB
  Storage: 8GB microSD card

Resolution/Accuracy

	RANGE	RESOLUTION	ACCURACY
HEAVE	±20 m	0.01 m	Better than 1%
PERIOD	1.5 to 33 sec	0.1 sec	Better than 1%
DIRECTION	0 to 360°	1°	3°

SYSTEM CERTIFICATION ISO 9001 SGS