



DWR-G unit

Datawell - Oceanographic Instruments

Turn your navigation or meteo-buoy into a directional wave buoy with this GPS-based wave motion sensor package.

Shipping lanes and harbour entrances are usually marked by numerous navigation buoys. Especially at these locations seafarers are interested in the wave conditions. Furthermore, networks of marine and meteorological monitoring buoys cover the oceans for weather forecasting and climate change studies. Such networks offer a good opportunity to collect ocean wave data as well. These are just two examples for application of the Datawell DWR-G unit: a directional wave motion sensor package based on GPS, combined with one of the Datawell communication links.

The DWR-G unit builds on the Datawell principle of measuring waves with a single Global Positioning System (GPS) receiver. No differential GPS receiver is required. The same principle is also exploited in the DWR-G directional Waverider buoys. It offers 3-dimensional motion with centimetre-precision up to wave periods of 100 seconds. Read about the performance in the December 2003 issue of Sea Technology. For this and more publications you can visit our website or contact sales.

In essence, the DWR-G unit is a stripped DWR-G buoy, retaining only the motion sensing, processing and communication core parts: the GPS antenna, one of the Datawell communication antennas and the electronic unit. If your buoy provides for power and a watertight compartment with feedthroughs for the GPS and communication antenna, this will be all you need!



DWR-G unit in watertight box with external GPS antenna (communication antenna is not shown).

With the corresponding communication link receiver you can directly profit from the Datawell W@ves21 and SeaSaw21 acquisition, processing and presentation software. In addition, the data are logged internally on the standard data logger for back-up and later retrieval.

Currently one communication link is available. HF communication provides raw displacements, full spectra and buoy position. It is complemented by the RX-D / RX-C or Warec receiving end.



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Specifications

Wave motion sensor	Sensor	single GPS (not differential)
	Precision	1-2 cm, all directions (1σ) buoy mooring and pitch-roll may affect wave measurement precision
	Periods	1.6 s - 100 s
	Calibration	not required ever
	Exclusion	GPS signals do not penetrate through water, occasional data gaps may occur
	Exclusion	not resistant to SA (Selective Availability, may be switched on by US Department of Defence for strategic reasons)
Wave data	Data	north, west, vertical
	Resolution	1 cm (north 2 cm, LSB "north" is GPS data gap indicator)
	Range	-20 m - +20 m
	Rate	1.28 Hz
	Reference	WGS84
Spectral data	Frequency resolution	0.005 Hz below 0.10 Hz and 0.010 Hz above
	Frequency range	0.025 Hz - 0.58 Hz
	Direction resolution	1.5°
	Direction range	0° - 360°
GPS position	GPS position	every 30 min, precision 10 m
Datalogger	Datalogger	Compact Flash Module 512 Mb
Communication option	HF transmitter	frequency range 25.5 MHz – 35.5 MHz (35.5-45.0 MHz on request) transmission range: line of sight (typically 10-15 Km depending on buoy design)
General	Dimensions	Electronic unit, box: 330 mm x 230 mm x 185 mm (L x W x H, width excluding feedthroughs)
	Weight	Box: 7 Kg GPS antenna: 3 Kg
	Housing material	Box: aluminium, watertight (IP66)
	Power	external: 10 V - 30 V, 1.7 W (continuous, including HF communication link)