



Mini Directional Waverider GPS

Datawell - Oceanographic Instruments

Datawell's smallest directional wave measuring buoy

With a 40 cm mini-buoy version Datawell completes its range of GPS buoys: DWR-G9, DWR-G7 and DWR-G4, with 0.9 m, 0.7 m and 0.4 m diameters, respectively.

Just like its larger equivalents the DWR-G4 relies on the Datawell principle of measuring waves with a single Global Positioning System receiver (GPS). By now this technique is well-established in oceanography as evidenced by several publications and well-pleased users in the field.

Small though it is, the DWR-G4 offers full-functionality and full-compatibility with other Datawell equipment. Data links and formats, RX-C receiver, Waves4 software, batteries, etc. are all the same or compatible.

Weighing 17 Kg only the DWR-G4 may be readily deployed and recovered by hand from a small boat with outboard engine. Via HF link, directional and spectral wave data can be transmitted, e.g. to a portable, compact RX-C receiver connected to a laptop running the Waves4 software. The LED flasher and/or the HF-transmitted GPS position facilitate tracking or locating the buoy.



In addition, a GSM link is available for near-shore or in-shore use and an Iridium-SBD or Argos satellite link for worldwide track & trace.

Iridium-SBD, GSM and Argos will transmit compressed spectra, the standard datalogger will secure the full set of wave data.

It can be deployed free-floating or moored for currents up to 1 m/s.

The DWR-G4 may be put to good use as:

- a temporary extra or replacement buoy in monitoring networks
- a sea-state monitoring buoy during dredging, construction, etc. operations
- a drifting buoy



0.4 m hull



electronics unit (bottom)



High quality Peli case





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Specifications

Wave motion sensor	Sensor	single GPS (not differential)
	Precision	1-2 cm, all directions (1σ) (excluding GPS antenna pitch and roll motion)
	Periods	heave 1.6 s - 100 s direction 1.6 s - 100 s (free-floating) 1.6 s - 20 s (moored)
	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)
	Exclusion	measurements fail at position changes > 100 m in < 100 s, e.g. when used free floating or towed at constant velocities > 1 m/s
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 - 0.60 Hz
	Direction resolution	1.5°
	Direction range	0° - 360°
Standard features	Datalogger	Compact Flash Module 2 Gb
	Flashlight	4 high intensity LEDs, colour yellow (590 nm), pattern 5 flashes every 20 seconds
	GPS position	every 30 min, precision 5 m
General	Hull diameter	0.40 m (0.46 including fender)
	Material	stainless steel (AISI316)
	Weight	17 Kg
	Batteries	operational life 30 days, 1 section of 4 batteries, type Datacell RC27G (green)
	Receiver	RX-C
	Hull painting	Brantho KorruX "3 in 1" paint system (no anti-fouling)
	Packaging	high quality Peli case
Options	HF transmitter	frequency range 25.5 MHz - 35.5 MHz (35.5-45.0 MHz on request) transmission range: line of sight (hand-held receiver) 25 Km (receiver with ground-plane antenna) line of sight (receiver with portable antenna)
	Iridium-SBD	satellite communication
	Argos	satellite communication
	GSM	mobile communication
	Water temperature	range -5 - +46 °C, resolution 0.05 °C, accuracy 0.2 °C
	Mooring	up to several 100 m depth, up to 1 m/s currents