



# Mini Directional Waverider GPS

Datawell - Oceanographic Instruments

## The smallest directional wave measuring buoy on the market

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-D and Warec receiver, W@ves21 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 an inflatable boat with outboard engine. Via HF link, directional and spectral wave data are transmitted, e.g. to a portable, compact RX-D receiver connected to a laptop running the W@ves21-software. The LED flasher and/or the HF-transmitted GPS position facilitate tracking or locating the buoy.



Alternatively, a GSM link is available for near-shore or in-shore use. In the near future an Argos satellite link will be introduced for application in a drifting buoy. GSM and Argos will transmit compressed spectra only, but the logger (standard) will always secure the full set of wave data.

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

- an evaluation buoy to select long-term deployment sites
- a sea-state monitoring buoy during dredging, construction, etc. operations
- a drifting buoy



hatchcover with antennas



electronics unit (bottom)



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## Specifications

<b>Wave motion sensor</b>	Sensor	single GPS (not differential)
	Precision	1-2 cm free floating, all directions ( $1\sigma$ ) (excluding GPS antenna pitch and roll motion)
	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)
<b>Wave data</b>	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
<b>Spectral data</b>	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°
<b>Standard features</b>	HF transmitter	frequency range 27 MHz - 40 MHz, transmission range 10 Km (hand-held receiver) 25 Km (receiver with ground-plane antenna)
	Data logger	type 1 Compact Flash Module 128 Mb
	Flash light	4 high intensity LEDs, color yellow (590 nm), pattern 5 flashes every 20 seconds
	GPS position	every 30 min, precision 10 m
<b>Options</b>	GSM	mobile communication
	Argos	satellite communication (available soon)
	Water temperature	range -5 - +46 °C, resolution 0.05 °C, accuracy 0.2 °C
	Hull painting	Brantho Korruux "3 in 1" paint system (no anti-fouling)
<b>General</b>	Hull diameter	0.40 m (0.46 including fender)
	Material	stainless steel (AISI316)
	Weight	17 Kg
	Mooring	no mooring, use free floating
	Batteries	operational life 25 days 1 section of 4 batteries, type Datacell RC17G (green) rechargeable batteries on request
	Receiver	RX-C, RX-D or Warec (older Warecs may need modification)