



Directional Waverider MkIII

Datawell - Oceanographic Instruments

The Directional Waverider DWR-MkIII: Three years of continuous operation

The Directional Waverider hardly needs any introduction: it is the world's standard for measuring wave height and wave direction. Its success is due to the proprietary well-proven and accurate Datawell stabilized platform sensor, enabling wave height measurements by a single accelerometer. For the wave direction, direct pitch and roll measurements are performed needing no integration. In combination with horizontal accelerometers and a compass this forms the complete sensor unit, the heart of the instrument.

The highlights:

- **Real time** measurement of wave height with half-hourly heave and directional spectra updates.
- **HF link up to 50 km** over sea. The proprietary Datawell HF link module is easy replaceable if a different transmission frequency is required.
- **LED flashlight** integrated in the top of the antenna increasing the buoy's visibility.
- **GPS receiver** for buoy positioning has now become a standard feature of the DWR-MkIII, and facilitates its retrieval.
- **Integrated datalogger** based on the latest flash card technology.
- A **water temperature sensor** in the mooring eye providing sea surface temperature
- **High capacity primary cells** operating reliably and safely under all wave conditions and weather circumstances for **up to three years** without replacement.
- Built-in **energy meter** reports an accurate estimation of the remaining operating life.

The DWR-MkIII comes standard with the Datawell HF link for ranges up to 50 Km over sea. For larger ranges the HF link can be combined or replaced with Iridium, Argos or Orbcmm satellite communication.

For near shore applications, a GSM link is also available. The MkIII can be supplied in a 70 cm hull offering easier handling and 1 year of continuous operation or a 90 cm hull for 3 years of continuous operation.

Optional features:

- **HF link:** 25.5 MHz-35.5 MHz
- **Iridium:** global, two-way satellite link
- **Argos:** global one-way satellite link
- **Orbcmm:** two-way satellite link
- **GSM:** near shore data link via SMS or Internet
- **Solar Power System:** solar panel combined with primary cells for extending operational life by at least 100%
- **Hull painting:** yellow (no anti-fouling)
- **Radar reflectors** to increase visibility in busy waters



0.7 m DWR-MkIII with optional painted hull



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Specifications

| | | |
|--------------------------------|--------------------------|--|
| Resolution and Accuracy | Heave | Range: -20 m - +20 m, resolution: 0.01m Accuracy: < 0.5% of measured value after calibration < 1.0% of measured value after 3 year Period: 1.6 s - 30 s |
| | Direction | Range: 0° - 360°, resolution 1.4° (1 binary degree) Heading error: 0.4° - 2° (depending on latitude) typical 0.5° Period: 1.6 s - 30 s (free floating) |
| | Water temperature | Range: -5 °C - +46 °C, resolution: 0.05 °C Accuracy: < 0.1 °C (sensor accuracy) |
| Sensor and Processing | Type | Datawell stabilized platform sensor, performing heave and direct pitch and roll measurements combined with a 3D fluxgate compass and X/Y accelerometers. |
| | Sampling | 8-channel, 14bit @ 3.84Hz |
| | Processing | 32 bits microprocessor system |
| Standard features | Integrated datalogger | Compact flash module 512Mb |
| | LED Flashlight | Antenna with integrated LED flasher, colour yellow (590 nm), pattern 5 flashes every 20 s, standard length 35 cm |
| | GPS position | 12 channel, fix every 30 min, precision <10 m |
| Optional features | Datawell HF link | Frequency range 25.5 - 35.5 MHz (35.5 - 45.0 MHz on request) Transmission range 50 Km over sea, user replaceable. For use with Datawell RX-C or RX-D receivers. |
| | Iridium / Argos / Orbcmm | Satellite communication for remote applications |
| | GSM | Mobile communication for near shore applications |
| | Solar power system | Solar panel combined with Boostcap capacitors |
| | Hull painting | Brantho Korruux "3 in 1" paint system (no anti-fouling) |
| | Radar reflectors | Two reflectors mounted on hatchcover (retrofitable) |
| | Hull diameter | 0.7 m and 0.9 m (excluding fender) |
| General | Material | Stainless steel AISI316 or Cunifer10 |
| | Weight | Approx. 105 Kg (0.7m), approx. 225 Kg (0.9m) |
| | Batteries | 0.7 m diam. operational life 1 year, 1 section of 15 batteries 0.9 m diam. operational life 3 years, 3 sections of 15 batteries Type: Datacell RC20B (200 Wh black) |
| | Temperature range | Operating: -5 °C - +35 °C Storage: -5 °C - +40 °C (+ 55 °C short term, weeks only) |