

COST-EFFECTIVE, SMALL, DIRECTIONAL WAVE BUOY WITH REAL-TIME COMMUNICATION AND OPTIONAL SENSORS

WaveWatcher from Ocean Origo is a small, rugged, accurate wave buoy designed for ocean engineering, operational oceanography and alike. It operates in off-shore, near-shore, coastal, fjord and lake areas. Free drifting or moored, the later requiring proper elastic mooring elements optionally supplied by Ocean Origo.

It has enough batteries for about 18 months operation on a standard alkaline battery unit, 4 years on optional lithium batteries. WaveWatcher survives 'knock down' to 30 m depth and its tight, compact design and stainless steel/polymer materials makes it robust and corrosion resistant. Low centre of gravity results in low pitch & roll and WaveWatcher moves smoothly in water – benefiting both wave and optional current measurements. WaveWatcher accurately measures 'all' wave parameters 'on-board' including wave direction and wave spectrum using high quality MEMS technology. GPS-position and water temperature are

also included in the data set. Optional sensors, like SeaBird CTD and Nortek profiling current meter may also be integrated thus turning the wave buoy into a low cost ODAS mini-buoy. Data is transmitted in real-time via GSM for near shore locations or Iridium satellite (SBD) for world-wide positions or ZigBee radio for local transmission. Remote reconfiguration of WaveWatcher is possible for all three alternatives. Data may optionally be presented on WWW in real-time.

WaveWatcher may easily be separated in parts thus facilitating storage and transportation. Its relatively small size and weight allows for economical small-sized vessel operation which, together with its low purchase cost, high building quality and minimal maintenance requirements, sums up to a really attractive user budget. Comes in two versions: 0.65 m diameter 'WaveWatcher' and 1 m diameter 'WaveWatcher+' .



Real-time data transmission via GSM, satellite or radio

Robust & functional design

Open ocean, coastal, near-shore, fjords and lakes

All data stored on internal micro-SD card for back-up

18 months operation on standard alkaline batteries

'All' wave parameters incl. wave direction, 'First 5' and spectrum

GPS position and water temperature

Free drifting or moored



Rugged, reliable, unsinkable

Accurate

Optional sensors like CTD, ADCP, etc

Easy to transport, store & handle

Small-sized vessel operation

Vertically stabilised.

Low purchase and operational costs

Easy to deploy and recover

SPECIFICATION **WAVEWATCHER / WAVEWATCHER+**

Wave parameters & other parameters	<ul style="list-style-type: none"> • Significant wave height (H_s) • Maximum wave height (H_{max}) • Dominant wave period (DPD) • Dominant wave direction (Dir) • Full wave spectrum • "First-5" wave coefficients for NOAA compliant data logging/transmission • Water temperature • Buoy position (GPS, GLONASS, Galileo, Beidou) • System time (UTC)
Range & Accuracy (typical values)	<p>Wave height: Range: 0-40 m. Resolution: 1 mm. Accuracy: +/- 5 mm</p> <p>Wave period: Range: 0.8-20 s. Resolution: 0.1 s. Accuracy: 1 %</p> <p>Wave direction: Range: 0-360 deg. Resolution: 0.1 deg. Accuracy: +/-4 deg</p> <p>Water temperature: -5 to + 45 C. Accuracy +/- 0.2 C. Time constant: 20 min</p> <p>Buoy position: Horizontal accuracy - typical 2 m @ open sky condition.</p> <p>Time: Accuracy within 2 s when system set for GPS/GNSS time sync.</p>
Dimensions	<ul style="list-style-type: none"> • WaveWatcher: Dia 65 cm. Height: 150 cm excluding antenna. m=55 kg incl. batteries. • WaveWatcher+: Dia 100 cm. Height: 150 cm excluding antenna. m=70 kg inc. batteries.
Buoy hull	Polyurethane closed cell foam filled polyethylene hull. Strong, resistant, 'unsinkable' design. Yellow colour compliant to IALA E-108.
Material	Stainless steel (316 & 316L) and polymer.
Buoyancy	<ul style="list-style-type: none"> • WaveWatcher: 80 kg residual buoyancy. • WaveWatcher+: 200 kg residual buoyancy.
Environment	Operation: -30 to +45 ° C. Avoid ice conditions. Storage: -40 to +55 ° C.
Max. buoy depth	30 m (knock-down).
Mooring depth	> 8 m up to 2000 m. Proper elastic mooring elements must be used. ¹⁾
Nautical, etc.	Buoy LED light (5 flash, 20 s). Radar reflector. Mooring eye near buoy COG. 2 x lifting eyes.
Portability	Buoy is easily separated in parts thus facilitating storage, handling and transportation. WaveWatcher+ fits in a regular station car.
Power	Alkaline battery unit: (4.2 kWh, 176 D-cells). Non-magnetic. Quick & easy exchange.
Battery life time	Depending on system configuration. Ex: Continuous wave sampling, 24 GSM transmissions/day, no optional sensors, standard alkaline unit: approx. 18 month
Data storage	16 GB micro-SD card. Enough for several years of continuous sampling.
Remote comm.	<p>Customer can chose:</p> <ul style="list-style-type: none"> • GSM/GPRS modem for near-shore locations. SMS/email to customer's address. • Iridium satellite link (SBD) for world-wide communication. E-mail to customer's address. • ZigBee radio communication to operators modem/computer. <p>- 2-way communication. All alternatives allow for operator to remotely re-configure buoy.</p> <p>- Data transmitted at end of every measuring cycle.</p>
PC communication	RS232/USB by cable. Use standard terminal window program (TeraTerm, etc). Configuration & test-ability of all sub-systems like GPS, modems, etc. Very easy to manage and get system overview.
Other	<ul style="list-style-type: none"> • Run-time error & reporter log automatically generated. Stored on u-SD memory card. • On-board lithium battery cell for real-time clock back-up. • Automatic "Start sampling" at power up.
Scope of delivery	WaveWatcher incl. standard alkaline battery unit, communication according to customers choice (GSM, Iridium or ZigBee), GNSS/GPS sensor, temperature sensor, 16 GB micro SD memory card, buoy LED light, manual, PC communication cable and dummy.
Options	<ul style="list-style-type: none"> • GSM, Iridium or ZigBee radio link. • Larger micro-SD data memory card, up to 256 GB. • Optional sensors¹⁾ like Nortek AquaDopp current profiler, SeaBird 37 CTD, etc. • High accuracy water temperature sensor. Accuracy +/- 0.005 C. Time constant: 1 s • Ocean Origo's WWW-based graphic interface. View real-time data on WWW-site. • Mooring equipment including elastic element required for moored applications. • Lithium battery pack²⁾. 13 kWh, 176 D-cells. Non-magnetic. • Independent GPS tracker.

1. Contact Ocean Origo to discuss best solution.
2. Note - standard lithium air freight limitations apply.

Ocean Origo for oceanographic instrumentation and consulting

Ocean Origo AB
Lexbyvägen 51
SE-433 31, Partille
Sweden

Tel. +46 709495566
E-mail: info@oceanorigo.com
Internet: www.oceanorigo.com