



WaveGuide Direction

Remote monitoring of wave direction, wave height, wave period and tide

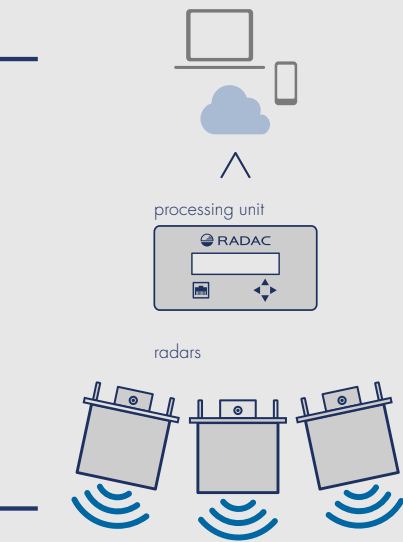
The Radac WaveGuide Direction is an accurate radar system incorporating advanced technologies that make it an easy to use, reliable and robust device to measure tide, wave direction, wave height and wave period. This system is designed for use in harsh environmental conditions and is particularly suited to marine and offshore installations.

Key features

- 0 - 360° wave direction
- 0 - 60 m wave height
- Highly accurate
- Maintenance free
- Low power at 22.8 W
- Optional ATEX certification

With an array of three radars, the elevation of the sea surface is measured at three positions. These positions form a virtual triangle at the water surface by pointing one radar perpendicularly downwards and tilt the other two. Knowing the slope of the water surface and the phase relations between the three positions, the wave direction can be calculated.

The radars measure the distance to the water surface 5 times per second. In all wind and wave conditions the accuracy for water level is proven to be below 1 cm. The wave data are sent to the processing unit via a serial link (RS485). The processing unit facilitates data acquisition, data processing, data presentation and remote service. Data can be locally stored on an external USB drive, or distributed through two serial ports as well as over the network. Any device connected to the (private) network can access the web-based user interface.



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We are a Dutch company, based in Delft. Since 1996, we develop, manufacture and market the WaveGuide. We are proud that our professional systems are trusted across the industry. Our main clients include oil companies, offshore wind farm operators, port operators and shipping companies.



Specifications

WaveGuide Direction

Heave	Range: 2 - 75 m Accuracy: ± 3 mm ¹⁾ Interval: 5 Hz
Water level	Range: 2 - 75 m Accuracy: ± 1 cm ^{2) 3)} Processing: 10 min average (optional 1 min and 5 min) Interval: 1 min
Wave height	Range: 0 - 60 m Accuracy: ± 1 cm ³⁾ Processing: SWAP ⁴⁾ (per 20 min data block) Interval: 1 min
Wave period	Range: 1 - 100 s Accuracy: ± 50 ms ³⁾ Processing: SWAP ⁴⁾ (per 20 min data block) Interval: 1 min
Wave direction	Range: 0 - 360° Accuracy: $\pm 2^\circ$ ³⁾ Processing: SWAP ⁴⁾ Interval: SWAP ⁴⁾ (per 20 min data block)

WaveGuide radar (x3)

Mechanical	Dimensions: \varnothing 265 x 255 mm Weight: 11.8 kg Material: Stainless steel
Electrical	Power: 24 - 64 VDC, 6 W Frequency: 10 GHz (X-band) Modulation: Triangular FMCW 128 MHz Emission: 0.1 mW max. (Far below acceptable limits for exposure to the human body)
Environmental	Temperature: -40 °C to 60 °C Humidity: 0 - 100 % Ingress Protection: IP67

Optional: WaveGuide Ex certified radar (x3)

Mechanical	Dimensions: 265 x 255 x 435 mm (d x w x h) Weight: 13.6 kg (incl. antenna 2.86 kg) Material: Chromatized aluminum
Electrical	Power: 24 - 64 VDC, 6 W Frequency: 10 GHz (X-band) Modulation: Triangular FMCW 128 MHz Emission: 0.1 mW max. (Far below acceptable limits for exposure of the human body)
Environmental	Temperature: -40 °C to 60 °C Humidity: 0 - 100 % Ingress Protection: IP67 Safety: ATEX II ½ GD T80 °C Eex d IIB T4 Class I, Division 1, Groups C and D, acc. To ANSI/NFPA 70 (FM,CSA)

WaveGuide processing unit

Dimensions:	170 x 172 x 85 mm (d x w x h) (19" rack mounting available)
Radar connections:	3x RS485 (up to 1200 m)
COM ports:	2x RS232
Network:	3x Ethernet
USB:	2x USB 2.0
Power:	24 - 48 VDC, 4.8 W (22.8 W if radars are powered via processing unit)
Temperature:	-20 °C to 65 °C
Cooling:	No fan required

1) Valid for a still water surface.

2) For a water surface with waves.

3) The accuracy of the wave parameters is not limited by the radar sensor, yet it is defined by the stochastic nature of sea-surface measurements.

4) SWAP is the Standard Wave Analysis Program, in accordance with the applied standards of the Dutch Ministry of Infrastructure and Environment and of the International Association of Oil and Gas producers.

