WaveGuide 5 Height & Tide

Our most plug and play wave radar to accurately measure wave height, wave period and tide. No water contact, no maintenance and no (re-) calibration. Zero hassle.

This accurate wave monitoring system is an easy to use, reliable and robust device to measure tide, wave height and wave period. The sensor is capable of maintaining high level of precision and accuracy in harsh environmental conditions and is particularly suited to marine and offshore installations.

Key features

- Highly accurate
- Maintenance free
- Easy installation
- Severe conditions proof
- Optional ATEX / IECEx
- Measuring at 10 Hz
- 0 - 60 m wave height
- 1 - 100 s range wave period
- Network connected
- Up to 5 years of internal data storage

Mounted high above the water and without any moving parts there is no need for preventive maintenance or cleaning. (Re-) calibration is never required due to long term stable zero reference and constant sensitivity.

The wave radar measures the distance to the water surface 10 times per second. In all wind and wave conditions the accuracy for water level is proven to be below 1 cm. The radar itself facilitates data acquisition, data processing, data presentation and remote service. Data will be internally stored on the device and distributed over the network. Any device connected to the (private) network can access the web-based user interface.

We are Radac

Technology leader in radar-based wave measurement

RADAC

Since 1996, our Dutch company have developed unique sensors to monitor the ocean surface. Because our wave radars operate without water contact, moving parts, or calibration requirements, they are virtually maintenance-free. This allows us to deliver reliable, high-value systems that keep operational costs to a minimum. Our systems are trusted industry-wide, serving offshore wind operators, oil companies, port authorities, and shipping companies worldwide.

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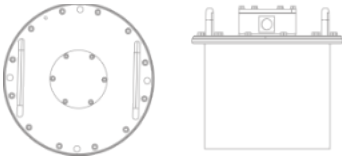
WaveGuide 5 Height & Tide

WG5 series

SPECIFICATIONS

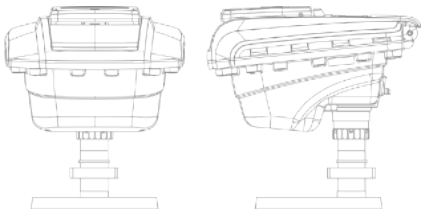
Heave	Range:	2 - 75 m to surface
	Accuracy:	± 3 mm [1]
	Frequency:	10 Hz
Water level	Accuracy:	± 1 cm [2] [3]
	Processing:	10 min average (optional 1 min and 5 min)
	Interval:	1 min
Wave height	Range:	0 - 60 m
	Accuracy:	± 1 cm [3]
	Processing:	SWAP [4] (per 20 min data block)
	Interval:	1 min
Wave period	Range:	1 - 100 s
	Accuracy:	± 50 ms [3]
	Processing:	SWAP [4] (per 20 min data block)
	Interval:	1 min

COMPACT VERSION: WG5-HT-CP



Mechanical	Dimensions:	ø 265 x 245 mm
	Weight:	12.5 kg
	Material:	Stainless steel, AISI 316L
Electrical	Power consumption:	24 - 65 VDC, 65 - 240 Vac, 8 W
	Frequency:	10 GHz (X-band)
	Modulation:	Triangular FMCW
	Emission:	0.1 mW max. (Far below acceptable limits for exposure to the human body)
Environmental	Temperature:	-40 °C to 65 °C
	Humidity:	0 - 100 %
	Ingress Protection:	IP67
Communication	Network:	1x Ethernet
	Subscriptions:	MQTT, UDP
	Data storage:	SD 32 Gb
	Optional:	External converter to RS232 or RS422 or RS485

EXPLOSION PROOF VERSION: WG5-HT-EX



Mechanical	Dimensions:	217 x 319 x 379 mm (d x w x h)
	Weight:	14.4 kg (excl. antenna 2.8 kg)
	Material:	Chromatized aluminum
Electrical	Power consumption:	24 - 65 VDC, 65 - 240 Vac, 8 W
	Frequency:	10 GHz (X-band)
	Modulation:	Triangular FMCW
	Emission:	0.1 mWatt max. (Far below acceptable limits for exposure of the human body)
Environmental	Temperature:	-40 °C to 65 °C
	Humidity:	0 - 100 %
	Ingress Protection:	IP67
	Safety:	ATEX, II 1/2 G Ex db [ia Ga] IIB T6 Gb IECEx, Ex db [ia Ga] IIB T6 Gb
Communication	Network:	1x Ethernet
	Subscriptions:	MQTT, UDP
	Data storage:	SD 32 Gb
	Optional:	External converter to RS232 or RS422 or RS485

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.

WaveGuide 5 Onboard 2

Our specialized motion compensated wave radar! Designed for onboard use.
It accurately measures wave height, wave period and draught. No water contact, no maintenance and no (re-) calibration. Zero hassle.

This accurate wave monitoring system is an easy to use, reliable and robust device to measure vessel draft level, wave height and wave period. The sensor is capable of maintaining a high level of precision and accuracy in harsh environmental conditions and is particularly suited to maritime use.

Key features

- Highly accurate
- Maintenance free
- Easy installation
- Integrated heave, pitch and roll compensation
- Measuring at 10 Hz
- 0 - 60 m wave height
- Network connected
- Up to 5 years of internal data storage

Typically mounted on the helideck, bow, or bridge, the WaveGuide5 Onboard2 continuously measures the distance to the water. An integrated, high-precision motion sensor compensates for heave, pitch, and roll in real time. This ensures accurate measurements of the real-time waves the vessel encounters.

The radar measures the distance to the water surface 10 times per second. The radar itself facilitates data acquisition, data processing, data presentation and remote service. Data will be internally stored on the device and distributed over the network. Any device connected to the (private) network can access the web-based user interface.

We are Radac
Technology leader in radar-based wave measurement

RADAC

Since 1996, our Dutch company have developed unique sensors to monitor the ocean surface. Because our wave radars operate without water contact, moving parts, or calibration requirements, they are virtually maintenance-free. This allows us to deliver reliable, high-value systems that keep operational costs to a minimum. Our systems are trusted industry-wide, serving offshore wind operators, oil companies, port authorities, and shipping companies worldwide.

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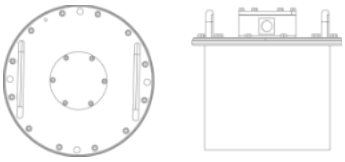
WaveGuide 5 Onboard 2

WG5 series

SPECIFICATIONS

Heave	Range:	2 - 75 m to surface
	Accuracy:	± 1 cm [1]
	Frequency:	10 Hz
Vessel draft level	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:	± 3 cm [3]
	Processing:	SWAP [4] (per 20 min data block)
	Interval:	1 min
Wave period [5]	Range:	1 - 25 s
	Accuracy:	± 50 ms [3]
	Processing:	SWAP [4] (per 20 min data block)
	Interval:	1 min
Limitations	Max. roll:	15 degrees
	Max. pitch:	15 degrees

COMPACT VERSION: WG5-OB2-CP



Mechanical	Dimensions:	ø 265 x 245 mm
	Weight:	12.5 kg
	Material:	Stainless steel, AISI 316L
Electrical	Power consumption:	24 - 65 VDC, 65 - 240 Vac, 12 W
	Frequency:	10 GHz (X-band)
	Modulation:	Triangular FMCW
	Emission:	0.1 mW max. (Far below acceptable limits for exposure to the human body)
Environmental	Temperature:	-40 °C to 45 °C
	Humidity:	0 - 100 %
	Ingress Protection:	IP67
Motion sensor	Range:	± 4 g
	Roll & Pitch:	0,02 degrees
Communication	Network:	1x Ethernet
	Subscriptions:	MQTT, UDP
	Data storage:	SD 32 Gb
	Optional:	External converter to RS232 or RS422 or RS485

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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.
5) The wave period is not compensated for the horizontal motion. Hence, for a moving vessel, the sensor measures the wave period as encountered by the vessel.

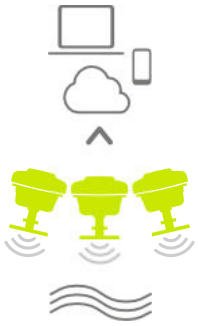
WaveGuide 5 Direction

Our flag ship wave radar. A truly unique system, as Radac is the only company who brings this technology to the market. It accurately measures wave direction, wave height, wave period and tide. No water contact, no maintenance and no (re-) calibration. Zero hassle.

The WaveGuide 5 Direction is an easy to use, reliable and robust device to measure tide, wave direction, wave height and wave period. The sensor is capable of maintaining high level of precision and accuracy in harsh environmental conditions and is particularly suited to marine and offshore installations.

Key features

- Highly accurate
- Maintenance free
- Easy installation
- Severe conditions proof
- Optional ATEX / IECEx
- Measuring at 10 Hz
- 0 - 360° wave direction
- 0 - 60 m wave height
- Network connected



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 10 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 network link. 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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WaveGuide 5 Direction

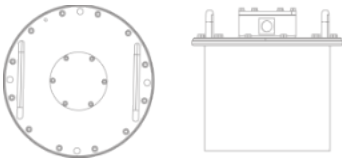
WG5 series

Specifications

Heave	Range:	2 - 75 m to surface
	Accuracy:	± 3 mm [1]
	Frequency:	10 Hz
Water level	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:	± 2° [3]
	Processing:	SWAP [4] (per 20 min data block)
	Interval:	1 min

COMPACT VERSION: WG5-DR-CP (includes 3 radars + 1 processing unit)

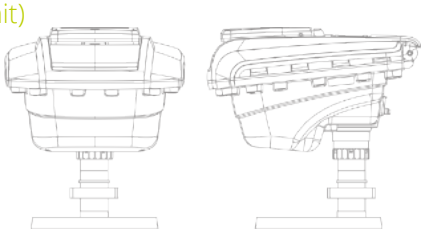
Specifications per radar



Mechanical	Dimensions:	ø 265 x 245 mm
	Weight:	12.5 kg
	Material:	Stainless steel, AISI 316L
Electrical	Power consumption:	24 - 65 VDC, 65 - 240 Vac, 8 W
	Frequency:	10 GHz (X-band)
	Modulation:	Triangular FMCW
	Emission:	0.1 mW max. (Far below acceptable limits for exposure to the human body)
Environmental	Temperature:	-40 °C to 65 °C
	Humidity:	0 - 100 %
	Ingress Protection:	IP67

EXPLOSION PROOF VERSION: WG5-DR-EX (includes 3 radars + 1 processing unit)

Specifications per radar



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	Material:	Chromatized aluminum
Electrical	Powerconsumption:	24 - 65 VDC, 65 - 240 Vac, 8 W
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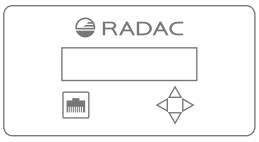
	Emission:	0.1 mWatt max. (Far below acceptable limits for exposure of the human body)
Environmental	Temperature:	-40 °C to 65 °C
	Humidity:	0 - 100 %
	Ingress Protection:	IP67
	Safety:	ATEX, II 1/2 G Ex db [ia Ga] IIB T6 Gb IECEx, Ex db [ia Ga] IIB T6 Gb
Processing unit	Dimensions:	170 x 172 x 85 mm (d x w x h)(19" rack mounting available)
	Com ports:	2x RS232
	Network:	3x Ethernet
	Subscriptions:	MQTT, UDP
	USB:	2x USB 2.0
	Power consumption:	24 - 48 VDC, 4.8 W
	Temperature:	-20 °C to 65 °C



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WaveGuide 5 Direction Onboard 2

The next level of our innovative wave radars: measuring waves, directly from a floating structure. A motion compensated version of the unique directional system. It accurately measures wave direction, wave height, wave period and draught. No water contact, no maintenance and no (re-) calibration. Zero hassle.

The WaveGuide 5 Direction Onboard 2 is an easy to use, reliable and robust device to measure draught, wave direction, wave height and wave period. The sensor is capable of maintaining a high level of precision and accuracy in harsh environmental conditions and is particularly suited to floating offshore installations such as floating turbines, semi-subs, FPSO's and other offshore vessels.

Key features

- Highly accurate
- Maintenance free
- Easy installation
- Integrated heave, pitch and roll compensation
- Measuring at 10 Hz
- 0 - 360° wave direction
- 0 - 60 m wave height
- Network connected
- Up to 5 years of internal data storage

Using a triangular array of three radars, the system measures sea surface elevation at three distinct points to calculate the full set of wave directional parameters. An integrated, high-precision motion sensor compensates for heave, pitch, and roll in real time. By default, wave direction is calculated relative to the vessel's heading using a fixed offset. Alternatively, connecting an NMEA heading input enables real-time calculation relative to True North.

Each radar measures the distance to the water surface 10 times per second. The wave data is sent to the processing unit via a network link. The processing unit facilitates data acquisition, data processing, data presentation and remote servicing. 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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WaveGuide 5 Direction Onboard 2

WG5 series

Specifications

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	Accuracy:	± 1 cm [1]
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Vessel draft level	Accuracy:	± 1 cm [2] [3]
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Wave height	Range:	0 - 60 m
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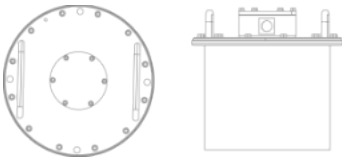
	Interval:	1 min
Wave period [5]	Range:	1 - 25 s
	Accuracy:	± 50 ms [3]
	Processing:	SWAP [4] (per 20 min data block)
	Interval:	1 min
Wave direction [6]	Range:	0 - 360°
	Accuracy:	± 2° [3]
	Processing:	SWAP [4] (per 20 min data block)
	Interval:	1 min
Limitations	Max. roll:	15 degrees
	Max. pitch:	15 degrees
	Max. heading change rate:	10 degrees per 20 minutes

COMPACT VERSION: WG5-DO2-CP (includes 3 radars + 1 processing unit)

Specifications per radar



Mechanical	Dimensions:	ø 265 x 245 mm
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	Material:	Stainless steel, AISI 316L
Electrical	Power consumption:	24 - 65 VDC, 65 - 240 Vac, 12 W
	Frequency:	10 GHz (X-band)
	Modulation:	Triangular FMCW
	Emission:	0.1 mW max. (Far below acceptable limits for exposure to the human body)
Environmental	Temperature:	-40 °C to 45 °C
	Humidity:	0 - 100 %
	Ingress Protection:	IP67
Motion sensor	Range:	± 4 g
	Roll & Pitch:	0,02 degrees
Processing unit	Dimensions:	170 x 172 x 85 mm (d x w x h)(19" rack mounting available)
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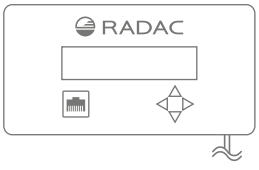
	Power consumption:	24 - 48 VDC, 4.8 W
	Temperature:	-20 °C to 65 °C



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6) Wave direction is given with respect to the vessel heading. Alternatively, connecting an NMEA heading input enables real-time calculation relative to True North.