Wavex - Speed Through Water

The X-band radar-based wave and current monitoring system, with speed through water.

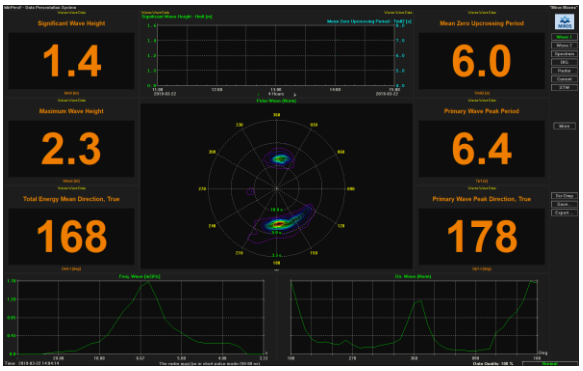
Wavex® captures and processes sea surface backscatter data from a standard X-band marine navigation radar. Through state-of-the-art, robust, accurate and adaptive algorithms it calculates and displays directional wave and surface current data. Reliable and accurate speed through water (STW) calculations are based on the same physical principles as the current measurements. The measurements are done in a relevant area of the waterbody, not affected by the vessel itself.

Key Features:

- Accurate speed through water calculations
- Real-time monitoring of directional waves, wave spectra and surface current
- Data recording
- Operates at any ship speed
- Data export to third-party systems
- No parts submerged in water
- Low maintenance cost

Essential For:

- Fuel optimisation
- Performance optimisation
- Input to ship monitoring systems
- Improved route planning
- Reduced damage to ship and cargo
- Increased passenger comfort
- Operational planning
- Wave and current data recording
- Structure integrity verification



The Wavex (WAVe EXtractor) system is compatible with most X-band radars and supports a set of IP radar protocols. It will not interfere with, or affect, the navigation system radar signals.

On moving installations, Wavex requires data input from a gyro compass and a GPS. Wind and draught data input are optional.

Wavex requires at least 1-3 m/s wind. Heavy precipitation will affect data capture rate.

The system GUI includes various current- and wave-displays. User defined layouts and visual alarms are available.

SPECIFICATION

Wavex 5.8 with Speed Through Water[10]

Wave data:

	Range	Resolution	Std. dev
Height	0 – 5 m	0.1 m	0.5 m [1]
	5 – 10 m	0.1 m	10 % [1]
	10 – 15 m	0.1 m	20 % [1]
Period	3.2 – 5.0 s [3]	0.1 s	0.5 s [2]
	5.0 – 13.0 s [3]	0.1 s	10 % [1]
	13.0 - 25.3 s [3]	0.1 s	20 % [2]
Direction	0 - 360°	1°	20° [0], 2° [2]

Surface current and speed through water data[10]:

	Range	Resolution	Std. dev
Speed	0 – 5 m/s	0.01 m/s	0.05 m/s [4]
Direction	0 - 360°	1°	10° [4]

Interfaces:

Output Interfaces:

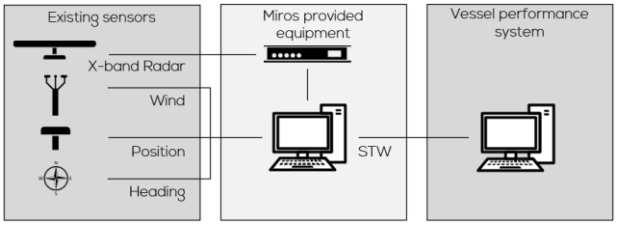
STW:	NMEA – VHW Modbus
Other sensor data:	Proprietary NMEA sentences Modbus (parameters only) Proprietary file formats via FTP

Input Interfaces:

Heading[5]:	NMEA - HDT
Position[5]:	NMEA – GGA/GLL
Draught[6]:	NMEA – XDR, or Modbus
Wind:	NMEA – MWV
Date/Time:	NMEA – ZDA or NTP

X-band radar interface:

Ant. Beam Width:	2° or less (4 feet or more)
Ant. Rot. Speed	15 - 48 RPM
Ant. Mount. Height:	15 - 100 m above sea level [8]
Pulse Mode:	Short pulse (50 - 80 ns)
Pulse Rep. Freq	1000 Hz or higher
Output Power	10 kW or more
Radar Signals	Raw video, sync, heading marker and azimuth.
Antenna Polarization:	Horizontal [9]



Electrical data[7]:

Supply voltage:	100 - 250 VAC, 50/60 Hz
Power consumption:	< 215 W

Compliance:

EU directives:	LVD, EMC
Environmental data and EMC:	IMO Res. A694 (17) IEC 60945
Serial communication:	IEC 61162-1
Presentation of navigation related information:	IMO Res. MSC.191 (79) IEC 62288

Notes:

1. According to the Wavex DNV GL Type Approval Certificate for Wavex v 5.7.
2. Theoretical measures.
3. Wave period range can be extended depending on site and configuration.
4. Using a Terma solid state radar on a fixed installation.
5. Required for moving installations
6. Highly recommended for vessels with variable draught.
7. For Miros supplied EM-129 Integrated Video Digitizer, Marine certified Computer and Display. Several approved display alternatives are available.
8. Lower antenna heights are possible depending on site and desired wave height range.
9. Other polarizations should have similar or better performance but needs verification.
10. Refer to the Miros white paper "Measuring the speed through water by Wavex®" for the outcome of several pilot installations with Wavex Speed Through Water.

Specifications are subject to change without prior notice.