MIROS

MIROS WAVEX
THE X-BAND RADAR-BASED WAVE, CURRENT AND SPEED THROUGH WATER SENSOR

DATASHEET

Wavex® captures and processes sea surface backscatter data from a standard X-band marine navigation radar. Through robust, accurate and adaptive algorithms it calculates directional wave, surface current and speed through water (STW) data. Measurements are made in a relevant area of the waterbody, unaffected by the vessel itself.
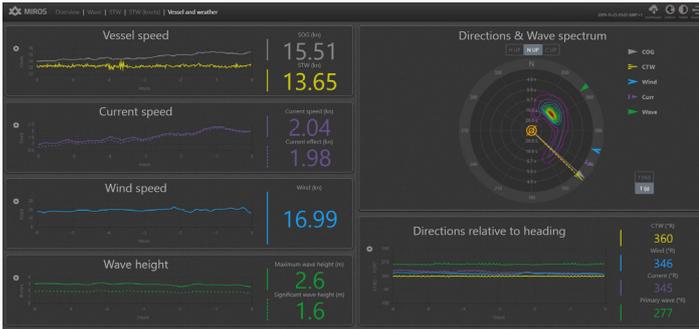
Wavex now provides easy and secure data access, both locally and remotely, by utilising modern IoT technologies - view and analyse real-time and historical data anytime, anywhere, on any device.

KEY FEATURES

- Real-time directional wave measurements
- Real-time surface current measurements
- Real-time STW measurements
- Operates at any ship speed
- No calibration required

- No parts submerged in water
- Low maintenance costs
- Integrates with third-party systems
- IoT-enabled & Cloud-integrated
- Access data locally & remotely

ESSENTIAL FOR

- Accurate vessel performance
- Accurate fuel optimisation
- Reducing damage to vessel & cargo

- Increasing passenger comfort
- Structural integrity verification
- Reducing uncertainty in weather claims

Wavex is compatible with a wide range of X-band radars and supports a range of IP radar protocols.

Operation requires the radar being in short pulse mode, but will otherwise 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 inputs are optional.

Wavex can be complimented with a number of value-adding Cloud services from Miros. These services include web displays, data processing, data push, and device management services.

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

Wavex is an IoT-enabled device that can be easily and securely integrated with both local and remote systems.

The system's web-based user interface visualises wave, current and STW data, combining them with weather data in a way that makes it easy to understand how your asset is affected by the prevailing weather conditions.

SPECIFICATIONS

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	0.1 s	0.5 s[2]
	5.0 - 13.0 s	0.1 s	10 %[1]
	13.0 - 25.3 s	0.1 s	20 %[2]
Direction	0 - 360°	1°	20°[1], 2°[2]

STW & Surface Current[3]:	Range	Resolution	Std. Dev
Speed	0 - 5 m/s	0.01 m/s	0.05 m/s
Direction	0 - 360°	1°	10°

Interfaces:
Output Interfaces:
Wave & Current: NMEA - Proprietary
STW: NMEA - VHW, Proprietary
**Input Interfaces:**
Heading[4]: NMEA - HDT
Position[4]: NMEA - GGA/GLL
Draught[5]: NMEA – XDR
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[6]
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 and azimuth
Ant. Polarisation: Horizontal

Electrical Data[7]:

Supply Voltage: 100 - 250 VAC, 50/60 Hz
Power Consumption: < 200 W
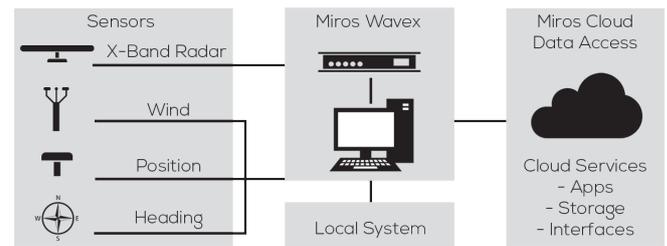
Compliance:

EU Directives: LVD, EMC
Environmental Data & EMC: IEC 60945, IMO Res. A694(17)
Communication Interfaces: IEC 61162-1, IEC 61162-450

Notes:

1. According to the Wavex DNV GL Type Approval Certificate for Wavex v 5.7. and Miros whitepaper "Automatically Calibrated Wave Spectra by the Miros Wavex System".

2. Theoretical measures.

3. Miros whitepapers: "Ocean Surface Current Measurements by the Miros Wavex System", "Surface Current Measurements from Moving Vessels by Wavex" and "Measuring the Speed Through Water by Wavex".

4. Required for moving installations.

5. Recommended for vessels with significant draught variations.

6. Lower antenna heights are possible depending on site and desired wave height range.

7. For Miros supplied EM-129 Integrated Video Digitiser, Marine-certified Computer and Display.

Specifications are subject to change without prior notice.