

SM-050 Wave and Current Radar



Remote measurement of directional waves, wave spectra and surface current.

The SM-050 Wave and Current Radar is a unique high performance remote sensor for measurement of directional wave spectra and surface current. It is the only sensor which utilizes dual-footprint pulse Doppler method for wave measurements, and microwave dual frequency method for measuring surface currents.

The sensor provides excellent quality wave-spectrum and -parameter data. The accuracy of which has been verified in a number of independent comparisons.

The SM-050 enables data to be easily and securely accessible both locally and remotely by utilizing modern IoT technologies.

The sensor has proved its ruggedness and reliability through years of service in extreme weather conditions, including heavy precipitation, all over the world.

Key Features:

- Embedded data processing and WEB-server
- Easy data access, locally and remotely
- No parts submerged in water
- High reliability
- Low maintenance cost
- For fixed and floating installation.

Essential For:

- Real-time sea state and surface current monitoring
- Marine operations
- Offloading operations
- Crane operations
- Structure integrity verification
- Collection of in-situ data, on- and offshore
- Strengthening of forecasts



The SM-050 at Gosan, South-Korea.

The radar observes the ocean surface in a semi-circle at a distance of 180 – 450 m depending on the installation height, typically 25 – 80 m.

The radar frequency gives a strong echo from the capillary waves normally present at wind-speeds > 2 m/s. It is not affected by heavy precipitation.

The water particle velocity is measured by use of Pulse-Doppler technique and provides accurate measurements even in harsh weather situations.

The SM-050 is a modern IoT-enabled device that can be easily and securely integrated both with local and remote systems. It can also be complimented with various value adding cloud services from Miros such as web displays, database integration, data processing and device management services.

SPECIFICATIONS

SM-050/04 Wave and Surface Current Radar

Wave data:

Directional Spectra	Bins	Range	Resolution
Directions:	36	-	10°
Frequencies:	37	0.03 – 0.3 Hz	0.0078 Hz
Parameters	Range	Resolution	Accuracy
Height:	0 – 4 m	0.1 m	±0.2 m
	4 – 30 m	0.1 m	±5 %
Period:	3 – 30 s	0.1 s	±5 %
Direction:	1 – 360°	1°	±7°

Update Interval: 2.5min. Averaging time: 45 min default

Surface current data:

Parameters	Range	Resolution	Accuracy
Speed:	0 – 2.5 m/s	0.01 m/s	±0.05 m/s
Direction:	1 – 360°	1°	±7°

Update Interval: 15 min. Averaging time: 90 min. default

Interfaces:

Standard interface: TCP/IP over CAT5e STP

Displays / GUI:

Data, status and configuration: WEB GUI⁴

Output Interfaces:

Sensor data: NMEA, proprietary formats
JSON over HTTP and Cloud

Status: JSON over HTTP and Cloud

Input Interfaces:

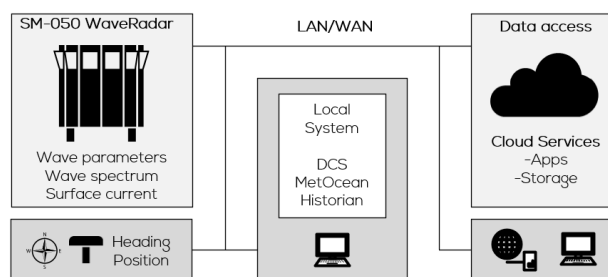
Heading: NMEA - HDT
Position: NMEA - GGA/GLL
Date/Time: NTP

Electrical Data:

Frequency of operation: 5.8 GHz pulse
Bandwidth: 20 MHz
Transmitted Power: 275 mW average (10 W peak)
Supply voltage: 110 VAC or 230 VAC ±10%
50-60 Hz

Power consumption: SM-050/04/SF: 85 W
SM-050/04/TM: 365 W

EMC: RED 2014/53/EU



Environmental specifications:

Temperature: -15°C (-25°C¹) to +40°C (+50°C²)
Humidity: 0 – 100 %RH
Ingress Protection: IP 66

Physical Specification:

Dimensions, H x W x D: 860 x 897 x 696 [mm]
870 x 1100 x 980 [mm]²
Weight: 47 kg (69kg²)
Material: Aluminum EN AW 5052-H32
Finish / Colour: Enamelled / Grey RAL 7035

Versions:

SM-050/04/SF S = Standard temperature range
SM-050/04/SM T = Tropical temperature range²
SM-050/04/TF F = Fixed installation³
SM-050/04/TM M = Floating installations

Accessories and options:

SM-050/04/xxA Alternative frequency¹
Tbd Built-in DSL modem, for extended cable distance to several km.
MP-309/03 Pedestal
MP-294/03 Shock absorber
Cloud services

Notes

1. On request, contact Miros for details.
2. Tropical version with sun shield and cooling door (versions SM-050/04/Tx).
3. The radar is designed for stationary use. Reasonable measurements may be obtained during transit at speeds up to 6-8 knots
4. WEB GUI with real-time and historical wave and current data, operational alarms, sensor status and sensor configuration.

Specifications are subject to change without prior notice.