Data Sheet
SM-048/2 Maritime Microwave Altimeter

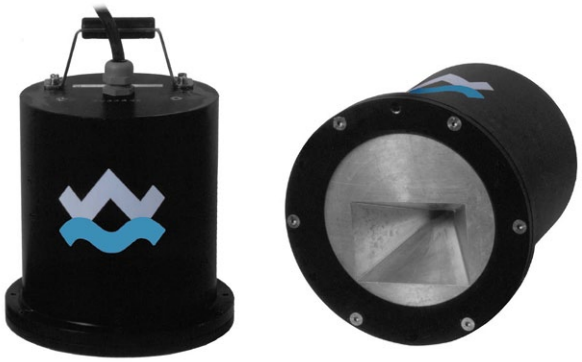
The MIROS Maritime Microwave Altimeter is a high performance sensor designed for measurement of:

- Airgap for ride control input on high speed vessels
- Wave profiles and airgap from fixed structures and vessels
- Water level and tidal variations.

The sensor should be mounted on a structure with free vertical sight to the water surface. The measurement range is 1 to 10 meters. The sensor is capable of acquiring data at vessel speeds up to at least 50 knots.

The sensor emits a microwave FM chirp signal and receives reflections from the water surface. The propagation delay of the electromagnetic signal, due to the distance between the antenna and the water surface, causes a beat signal in the receiver. By means of advanced frequency domain filtering the beat signal is converted to an accurate distance.

The FM chirp is generated by a digitally synthesized frequency sweep oscillator with absolute frequency linearity and high stability. The sensor therefore provides accurate range measurements and high long term stability.



Due to the high propagation velocity (compared to acoustic sensors), measurement reliability and accuracy is very good and makes the sensor well suited for use on high speed vessels.

Due to the low frequency of operation (compared to laser sensors), fog, rain and water spray will not cause measurement problems.

The sensor signal processing is performed by a micro-controller. The sensor provides the measured range as well as an averaged range with 1 mm resolution. Averaging time constant may be selected by user. The signal output may either be continuous at selected rate, or single measurements in response to user request.

Specifications

Microwave Transceiver:

Modulation:	Triangular FM
Frequency:	9.4 – 9.8 GHz
Output power:	0,25 mW (-6 dBm)

Antenna:

Type:	Pyramidal horn
Beam width:	20° (-3 dB one way)
Gain:	> 17.5 dB

Measurement Performance:

Range:	SM-048/2: 1-10 m
Error:	< 1 cm (individual measurements)
	< 1 mm (averaged measurements)

Power Requirements:

Voltage:	22 - 31 VDC (nominal 24 VDC)
Current:	0.2 A

Environmental:

Temperature:	-30 - + 50°C
Humidity:	10 – 100% RH

Housing:

Material:	Aluminum SWP 51S
Finish:	Anodized
Colour:	Black
Ingress protection:	Designed to meet IEC IP66

Physical:

Dimensions:	208 x Ø 216 mm (HxD)
Weight:	7 kg

Analogue Signal Output (optional):

Range:	0 – 10 V (0 m to full range*)
Load:	> 1200 ohms
Current:	< 10 mA
Band width:	2 Hz

Digital Signal Output:

Interface:	RS-232
Code:	ASCII
Baud rate:	9600
Data bits:	8
Stop bits:	1
Parity:	None
Data rate:	2*, 4 or 8 HZ
Data format:	aa.aaa<HT>hh.hhh<CR><LF>
	both aa.aaa and hh.hhh are measured range [m]
	with induvidually selectable averaging time periods

* factory setting, user programmable

Specifications are subject to change without prior notice.

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