

Meteo-Marine Monitoring Buoy



- High accuracy and availability of all wave parameters in raw data format.
- Innovative solutions designed to facilitate on-site maintenance.
- Redundant communication systems.
- Extensive system customization for tailor-made solutions.

Description

Poseid2 is a highly specialized buoy for meteo-marine monitoring, designed to ensure continuous and reliable measurements even in the most challenging marine and coastal environments. It is the result of years of research, development, and application within wave monitoring networks, adhering to the strictest international standards. In this context of high specialization. Years of investment and research have made it possible to industrialize Poseid2, offering a standard configuration capable of meeting the majority of requirements, along with numerous options for achieving a high level of customization. In its standard configuration, Poseid2 can measure wave height, direction, and period; wind speed and direction; barometric pressure; air temperature and humidity; solar radiation; and water temperature and conductivity.

With various optional features, Poseid2 can be further equipped with a current meter, multiparametric probe, water temperature profiler, webcam, radar rain gauge, visibility sensor, additional communication systems, and strategic redundancies in measuring, acquisition, and/or communication devices. Thanks to its advanced design choices, including the use of cutting-edge sensors, selected materials, and eco-friendly protective coatings, Poseid2 represents the state of the art in meteo-marine monitoring.

Even in its standard version, the buoy includes several features to ensure remote connectivity, enabling continuous acquisition of monitoring data and system status/alerts at the customer's control center. To enhance system resilience, the buoy is equipped with a dual power supply system comprising four of 25W solar panels (for a total of 100W) and two LiFePO4 battery, ensuring sufficient power even under the most demanding conditions.

In its standard configuration, the buoy includes:

- IALA-compliant flashing light (3 NM) and radar-reflective topmark for visual and radar signaling;
- Accelerometric wave sensor;
- IRIDIUM and GSM/UMTS/LTE communication systems;
- Embedded Linux-based onboard computer for data management, acquisition, and processing of alarms.

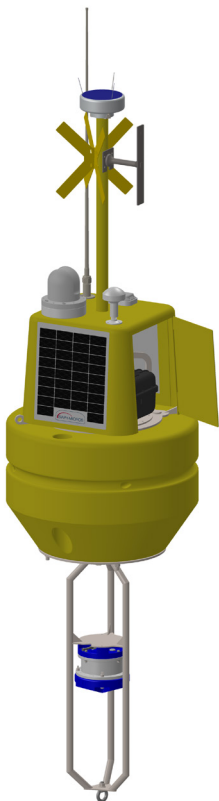
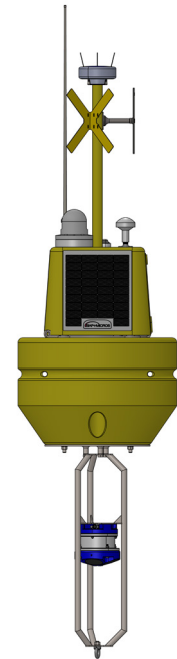
Hull

The lower section of the buoy incorporates a cylindrical core made of AISI 316L stainless steel, specifically optimized to enhance hydrodynamic stability. The upper section has been carefully designed to maintain a low weight above the buoy's center of gravity, in order to avoid interference with wave measurements. Special attention has been paid to facilitating at-sea maintenance.

Designed for maximum efficiency in offshore operations

Every component of Poseid2 is designed to facilitate installation, maintenance, and retrieval, even under challenging conditions:

- Reinforced lifting and mooring eyes, galvanically isolated, to simplify deployment and recovery operations;
- Stainless steel battery housings with IP68-rated sealing, ensuring protection up to 10 meters depth;
- Onboard electronics housed in an IP68-rated, connectorized enclosure, allowing for easy replacement as a single unit.



Sensor Technical Specifications

Wave Sensor

The wave sensor (accelerometric) of Poseid2, developed by SIAP+MICROS, is designed to provide comprehensive information on all displacements along the buoy's three axes (X, Y, and Z). It represents the state of the art in terms of high sampling frequency and data processing capabilities. Thanks to the combined measurements from the accelerometer, gyroscope, and magnetometer, Poseid2 is able to accurately and precisely reconstruct the buoy's movements in space, with uninterrupted acquisition cycles of 30 minutes every 30 minutes. The Euler angles are sampled at a frequency of up to 8 Hz (default: 4 Hz). The main parameters measured in both the time and frequency domains are listed below:

Parameter	Description	Unit
Misure (Time Domain)	Significant wave height	m
	Maximum wave height	m
	Mean Wave Period	s
	Peak Wave Period	s
	Mean Wave Direction	deg (0÷360)
Misure (Frequency Domain)	Mean Wave Height	m
	Significant wave height	m
	Mean Wave Period	s
	Peak Wave Period	s
	Mean Wave Direction	deg (0÷360)
	Peak Wave Direction	deg (0÷360)
	Mean Direction of Arrival of Wind Waves (waves generated by local wind)	deg (0÷360)

