

Met. Satellite 2300 Precision Meteorological & Navigational Mark Buoy

The Met. Satellite 2300 is the flagship product of the Marine Data Service and is a state-of-the-art meteorological buoy that is designed utilising the latest cutting-edge technology, to provide unrivalled data accuracy and reliability in a harsh, marine environment. The designers of the buoy having earlier proven themselves in the worlds premiere sailing event, where the founding partners of Marine Data Service were hired to design, develop, manufacture and manage the Meteorological Data Service.

The 22 buoys, landstations and weather boats used recorded a 99% uptime and attained a previously unheard of accuracy, which is yet to be surpassed.

Today this same engineering talent and experience has been poured into designing and building the Met. Satellite 2300 - a buoy that sets a new standard for accuracy, reliability and flexibility when compared to other high-end buoys in the marketplace and even to the buoy that was used so successfully in Valencia.

The Met. Satellite 2300

The Met. Satellite 2300 is a meteorological buoy with a difference. Unrivalled accuracy and reliability along with customisable data capture features make it the new benchmark in the industry.

High precision wind measurement is the standout feature of the Met. Satellite 2300, but its modular design and on-board computer system provides a flexible platform that allows for the addition of all manner of data capture systems, as defined by the customer.

Main Features

- Reliable, accurate data capture
- High stability and low wind resistance
- High anemometer mounting position
- Rugged proven technology
- State-of-the-art design & materials
- Low maintenance and long lasting
- Customisable design
- Easily and inexpensively transported
- Quick to assemble and deploy
- Remotely managed
- Very competitively priced



Marine Data Service

P.O. Box 13140, 46021 Valencia, Spain, Fax: +34 961 120 861, Ph: +34 609 322 888
E-mail: info@marinedataservice.com Web: www.marinedataservice.com

Wind Measurement

Crucial to the buoys accuracy is its high stability, which allows the ultrasonic anemometer to be mounted 6m to 10m above water level. Thus wind measurement are relatively free from surface friction and turbulence created by the waves (a problem prevalent with the lower mounting position typically used on other buoys). The sonic and high-specification 3D compass have passed a demanding in-house testing procedure and proved their clear superiority in an offshore environment.

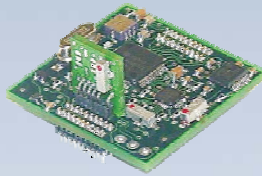
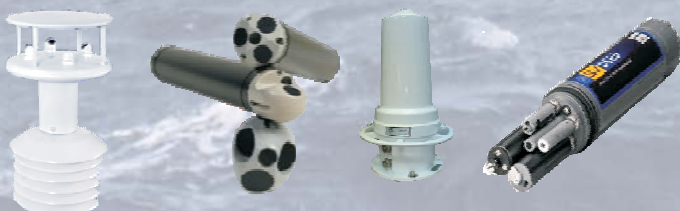


The data is then processed by the on-board computer using proprietary algorithms and calibration systems, resulting in extremely accurate True Wind readings. With proper calibration "True" accuracies of better than +/- 2° TWD and 2% TWS are achievable.

- Unrivalled True Wind accuracy
- Tilt & magnetic field compensated 3D compass
- Constructed from non magnetic materials thus the compasses magnetic field is undistorted by the buoy
- No moving parts (as with cup & vane anemometers that are prone to wear and distortion)
- No anemometer calibration required

Optional Sensors

The buoy accommodates all USB, RS-232, RS-422 and RS-485 compatible sensors, supports both NMEA and proprietary data formats. True wind, air/sea temperature, pressure, humidity, wave data, current profiles, radar transponder and pollution information are just some of the many parameters the buoy can be configured to capture. Sensors can be mounted internally or externally, in both cases above and below the waterline.



Visibility & Navigation

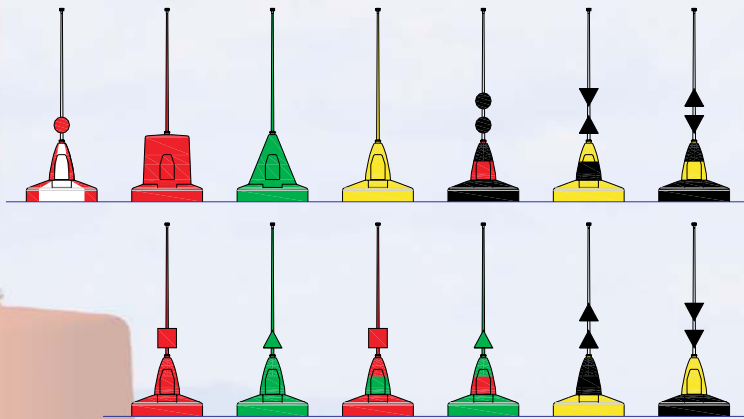
In daylight, the high visibility float, superstructure and mast are easily seen. At night, the programmable LED navigation light and reflective mast coating provide positive identification. The standard single tier navigation light has a specified range of 4 nautical miles. Additional tiers can be added to increase this range up to 13 nautical miles.



In case of a collision or malicious tampering with the mooring, the internal GPS will detect a significant deviation in coordinates and provide immediate notification, plus recovery position information to the MDS Data Centre.

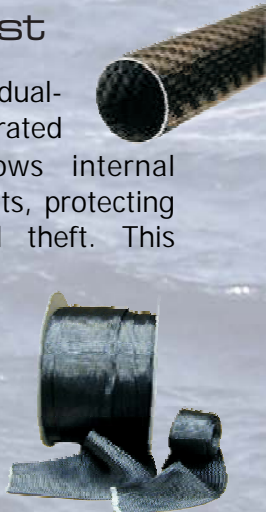


The buoy can be manufactured in a range of differently shaped superstructures and colours, as can the navigation light (as defined by IALA regulations) allowing it to be used as a dual purpose Met. Buoy / Navigational Mark Buoy. Or if purchased without the Met. mast and electronics package solely as a Navigational Marker Buoy.



Carbon Composite Mast

The masts high-tech, lightweight, dual-composite construction and integrated lightning protection system allows internal mounting of electronics / components, protecting them from the environment and theft. This streamlining also eliminates disturbances to wind flow, while its lightweight improves buoy stability, both features of which increase measurement accuracy.



Modular Design & Construction

The buoy's design and modularity along with its high quality construction, contributes to its flexibility, reliability, stability and ease of maintenance.

The unsinkable, polyethylene, foam filled float is able to withstand most collisions, plus provides a highly stable platform with minimal wind distortion, both of which are vital for accurate data measurement. Its sloping 'deck' provides resistance to bird fouling and makes it difficult for marine wildlife to 'board' the buoy. The low windage superstructure provides protection for the internal instrumentation and an access door/platform folds down to provide a secure, sheltered work area for servicing.

Buoy components are designed to be easily replaced at sea by relatively unskilled personnel. In addition all the parts of the buoy can fit into a plane cargo bay or nine buoys can fit into a single 40' shipping container, keeping shipping fees inexpensive.

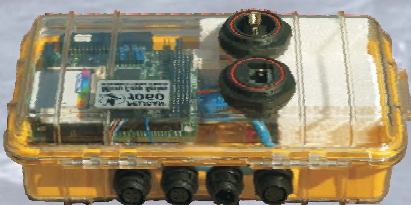


Electronics & Telemetry Module

The heart of the electronics module is the on-board computer, which performs several key functions:

- Control of all on board sensors
- Data acquisition, quality assurance, storage, sensor fault detection, self repair (when possible)
- Data processing, statistical & batch operations
- Inbuilt lightning resistance

Data is processed using a series of proprietary, in-house algorithms and is stored locally for later retrieval (if required), as well as being transmitted to the MDS Data Centre. System faults and alerts are sent in real-time to the MDS Data Centre to warn of problems or of potential failure conditions.



Telemetry

The Electronics and Telemetry modules are available with telemetry options for both coastal and ocean deployment.

- GSM/GPRS/3g Cellular
- Iridium LEO Satellite System

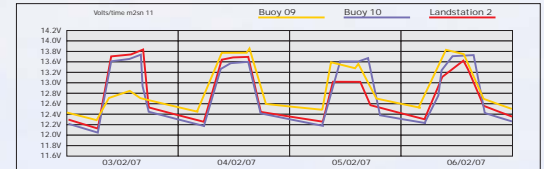
Transmission of real-time data at rates as low as 1 second is available, or longer term averages may be aggregated and sent though at regular intervals. The exact configuration is user definable and configurable from the MDS Data Centre.

Power Module

The standard buoy will run continuously off its solar panels; however further solar modules may be added for high load applications or areas with low solar radiance.



The high-capacity batteries pack allow an autonomous operation of up to two months without direct sunlight. Charge status is monitored remotely by the MDS Data Centre.



Management & Monitoring

Data is transmitted to the MDS Data Centre ensuring all buoys, land stations and boats are fully monitored and managed by our skilled staff. This in turn allows us to provide the highest availability and accuracy of the data through advanced warning and proactive resolution of faults.

The MDS Data Centre then makes both real-time data and historical data available through a secure internet connection and the included real time data display.

Firmware and software are remotely upgraded from the MDS Data Centre, so that the end user always benefits from the latest advances attained from our continuing research and development programmes.



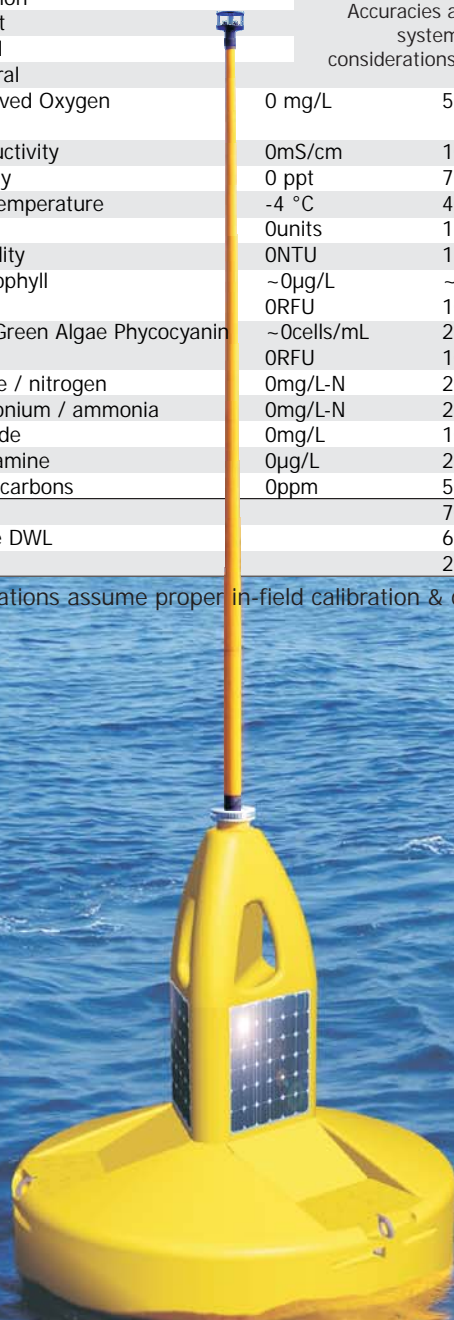
Met. Satellite 2300

Precision Meteorological & Navigational Mark Buoy

Specifications

	Measurement	Min	Max	Accuracy	
Typical	Wind	TWD (True Wind Direction)	0°	359°	±2°
		TWS (True Wind Speed)	0 knots	70 knots	±2%
	GPS	WASS enabled	2m	10m	
Some of the Optional Sensor & Accuracies	Atmosphere	Humidity	0%	100%	±2%
		Air Temperature	-40°C	100°C	±0.5°C
		Pressure	300hPa	1200hPa	±0.15hPa
	Current Profiler	Velocity	0.1cm/s	10m/s	1% ±5cm/s
		Direction	0°	359°	±3°
		Depth range (128 cells)	0.6 or 2m	10 to 90m	
	Wave	Direction			
		Height			
		Period			
		Spectral			
	Environmental	Dissolved Oxygen	0 mg/L	50mg/L	0-20mg/L 1% 20-50mg/L
		Conductivity	0mS/cm	100mS/cm	±0.5%
		Salinity	0 ppt	70 ppt	±1%
		Sea Temperature	-4 °C	40 °C	±0.15 °C
		pH	0units	14units	±0.2unit
	Turbidity	0NTU	1,000NTU	±2%	
	Chlorophyll	~0µg/L	~400µg/L	R ² >0.9999	
	Blue-Green Algae Phycocyanin	~0cells/mL	280,000cells/mL	R ² >0.9999	
		ORFU	100RFU		
		ORFU	100RFU		
	Nitrate / nitrogen	0mg/L-N	200mg/L-N	±10%	
	Ammonium / ammonia	0mg/L-N	200mg/L-N	±10%	
	Chloride	0mg/L	1000mg/L	±15%	
	Rhodamine	0µg/L	200µg/L	±5%	
	Hydrocarbons	0ppm	500ppm	0.1ppm	
	Buoy Weight		700 kg		
	Mast Height	Above DWL	6 to 10 m		
	Float Diameter		2.3 m		

The above sensor specifications assume proper in-field calibration & deployment.



MARINE DATA SERVICE

Marine Data Service

P.O. Box 13140, 46021 Valencia, Spain, Fax: +34 961 120 861, Ph: +34 609 322 888

E-mail: info@marinedataservice.com Web: www.marinedataservice.com