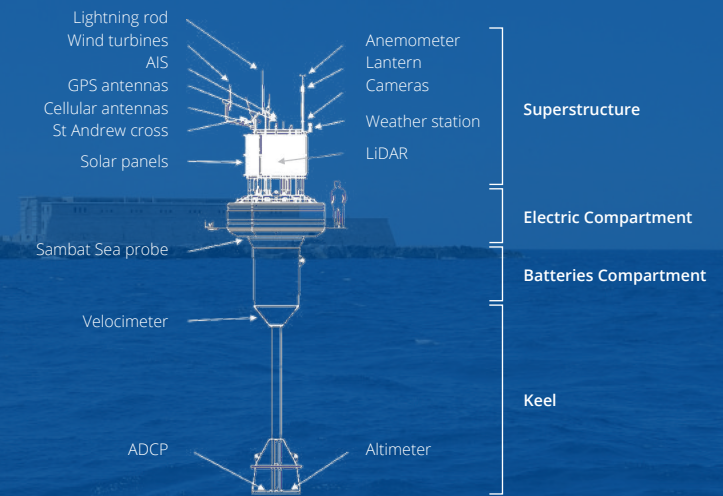




Schematic representation of the buoy



## Datasheet

# Floating LiDAR & Metocean measurement system

Accurasea has developed a floating platform dedicated to meteorological and oceanographic measurements for offshore wind farm development.

### Technical specifications

General	
Material	Steel keel, electric- and batteries compartment, aluminium superstructure and polyurethane float
Exterior items	Lightning protection, St. Andrew cross, yellow flashing lantern
Mooring	Various options, i.e. a taut line between a sinker and a sub-surface buoy
Certification	<sup>1</sup> Carbon Trust S2
Dimensions (open sea SPAR buoy)	
Length (incl. antennas)	15.8 m
Width	3.6 m
Draught	10 m
Weight	11,000 kg
LiDAR	
LiDAR instrument type	Léosphère Windcube V2.1 Offshore
Measurement height (configurable)	40 m – 300 m
Number of simultaneous heights measured	20
Sampling rate	1 Hz per measurement height
Wind speed range	0 m/s to 60 m/s
Power consumption	45 W nominal

Power generation	
6x photovoltaic solar panels	200 Wp each
3x wind turbine	350 W each
Back-up diesel generator	3 kW
<sup>2</sup> Valve regulated lead acid battery	19 kWh
Measurement equipment	
Position	MRU, differential GPS antenna's, fluxgate compass, GPS sensor for swing mooring alarm
Camera	HD camera for observing the LiDAR and HD camera for observing the sea
Sea wave and swell	Tide, swell and surface current
Sea surface	Water temperature, conductivity, salinity, pH, turbidity, dissolved oxygen, fluorescence, depth (altimeter), current profile
Metrological conditions	Air temperature, hygrometry, air pressure, precipitation (without gauge), dew point, wind direction and wind speed (cup and ultrasonic anemometer)
Optional	Acoustical measurements, birds and fishes scanning, marine mammals observation, Metocean models and databases combinations, artificial Intelligence algorithms for accurate predictions and risk mitigation
Data storage and communication	
Identification	Automatic identification system beacon
Communication	Automatic Identification System with VHF antenna, GPRS/3G antenna, WiFi antenna, SATcom
Data storage	256 Gb SSD PC and LiDAR storage
Others	
Various equipment	2x bilge pump

### <sup>3</sup> Accuracy

MSA	Monthly System Availability	100%
OSA	Overall System Availability	100%
MPDA	Monthly Post-processed Data Availability	96.8% to 99.7% for wind speed 90.8% to 99.4% for wind direction
OPDA	Overall Post-processed Data Availability	98.7% to 99.0% for wind speed 95.9% to 96.1% for wind direction
$X_{mws}$	Mean wind speed (slope)	1.011 to 1.018
$R^2_{mws}$	Mean wind speed (coefficient of determination)	0.989 to 0.991
$M_{mwd}$	Mean wind direction (slope)	0.997 to 0.998
$OFF_{mwd}$	Mean wind direction (offset)	3.174° to 4.400° for H = 86 m and H = 103m 5.460° to 6.870° for H = 52 m and H = 69 m
$R^2_{mwd}$	Mean wind direction (coefficient of determination)	0.997 to 0.999

<sup>1</sup> Specified in the Carbon Trust Offshore Wind Accelerator roadmap for the commercial acceptance of floating LiDAR technology, 2018. <sup>2</sup> Enough for 7 days of battery life without charging. <sup>3</sup> Results of the 2019 validation campaign in Blyth (DNV-GL)

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