

GYROCOMPASS AND MOTION SENSOR

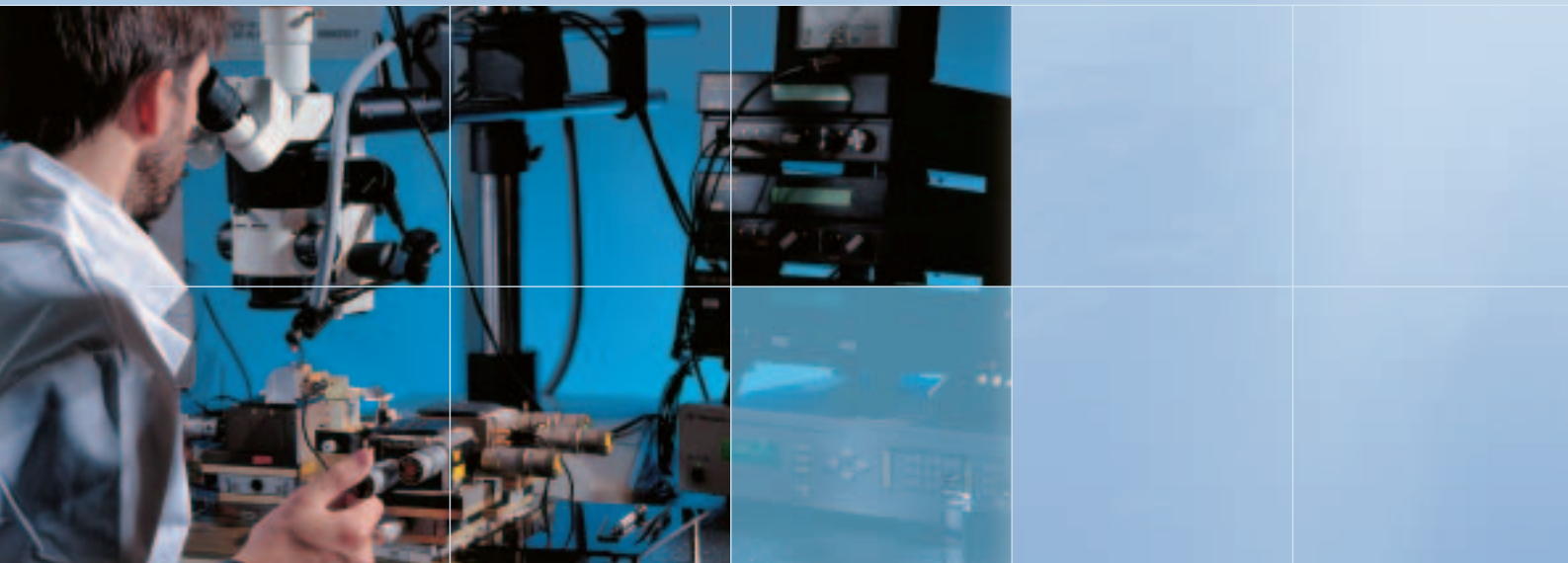
OCTANS

NAVIGATION AND
POSITIONING



THE BEST IN FOG TECHNOLOGY

The technological heart of OCTANS is the Fibre-Optic Gyroscope (FOG), the only truly-solid-state answer to rotation sensing. Over 20 years, IXSEA OCEANO has brought this technology to the highest industry standards through a large number of projects and applications.



World-class scientists are continually increasing the patent portfolio of IXSEA OCEANO and are leading the race in the design and manufacture of fibre-optic gyroscopes for defence and space applications. As part of recent projects, IXSEA OCEANO delivered the highest performing FOG to date to NASA and ASTRIUM.

OCTANS, THE TRUE-NORTH SEEKING GYROCOMPASS WITH MOTION SENSING

NO LIMITATIONS

With no spinning devices, the system has **no service limitation** on roll and pitch and can even be **used on its back**.

MAINTENANCE-FREE

OCTANS has no gimbals and because it experiences **no mechanical fatigue**, no maintenance is needed.

CALIBRATED FOR LIFE

OCTANS features **a life-long calibration** thanks to the solid-state technology of its components.

RELIABLE

The rugged and **shock-insensitive** system has a 30000-hour MTBF.

COMPACT

Currently the **smallest and lightest** gyrocompass, OCTANS can easily be transported to the operation site.

SHORT SETTLING TIME

OCTANS locks on True-North with **full accuracy in less than 1 minute**.

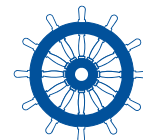
VERSATILE

OCTANS is an **IMO-certified survey-grade gyrocompass** and also a **complete motion sensor** that outputs Roll, Pitch, Surge, Sway, Heave, Speeds, Accelerations **in addition to True Heading**.

HIGH-PERFORMING

OCTANS features **high performances in all sea-conditions**:

- **1-minute settling time,**
- **0.1° Heading accuracy,**
- **0.01° on Roll and Pitch.**



IMO Certified
N° 09807/A0 EC

TESTS AND CALIBRATION

Based on years of know-how gained in the making of fibre-optic gyroscopes for military and space projects, state-of-the-art manufacturing procedures have been developed and implemented at IXSEA OCEANO.



EXTENSIVE TESTS

All OCTANS components are checked all along the manufacturing process: from reception to final assembly. The performances of the accelerometers, electronic boards and fibre-optic gyroscopes are monitored during several thermal cycles covering the specified -40°C to $+80^{\circ}\text{C}$ range. This burn-in process guarantees that specifications are met at each stage of the manufacturing. Full records are kept for quality assurance.



CALIBRATION

A complete calibration of the unit is performed using 3-axis tables accurate to 0.001° . Scale factors and biases of each accelerometer and fibre-optic gyroscope are calibrated from -40°C to $+80^{\circ}\text{C}$ to ensure a perfect behaviour in all dynamics. Dimensional control is also carried out on the OCTANS base plate so that each unit can be installed within 0.01° .



WARRANTY

All OCTANS units are delivered with a test certificate and are guaranteed for 2 years.

EASY SET-UP AND CONFIGURATION

OCTANS configuration software allows an individual setting of each port and the simultaneous use of up to 5 inputs and 7 outputs.

Serial I/O

• Protocols

Industry standards,
NMEA 0183, binary

• Electrical level

RS232 or RS422

• Baud rates

600 Bauds to 115 K Bauds

• Bits

Number of stop bits/parity

Analog I/O

Scale factors

Pulses I/O

Scale factors

Output frequency

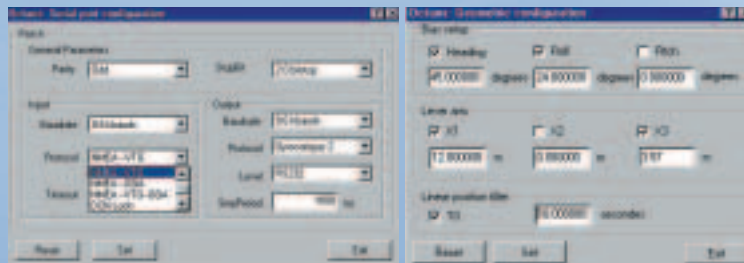
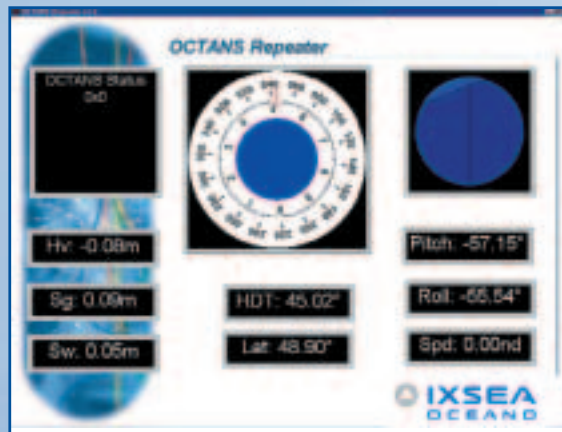
0.001 Hz up to 300 Hz

Internal update rate

300 Hz

Heave filtering parameter

Tunable



OPERATIONAL ASSETS

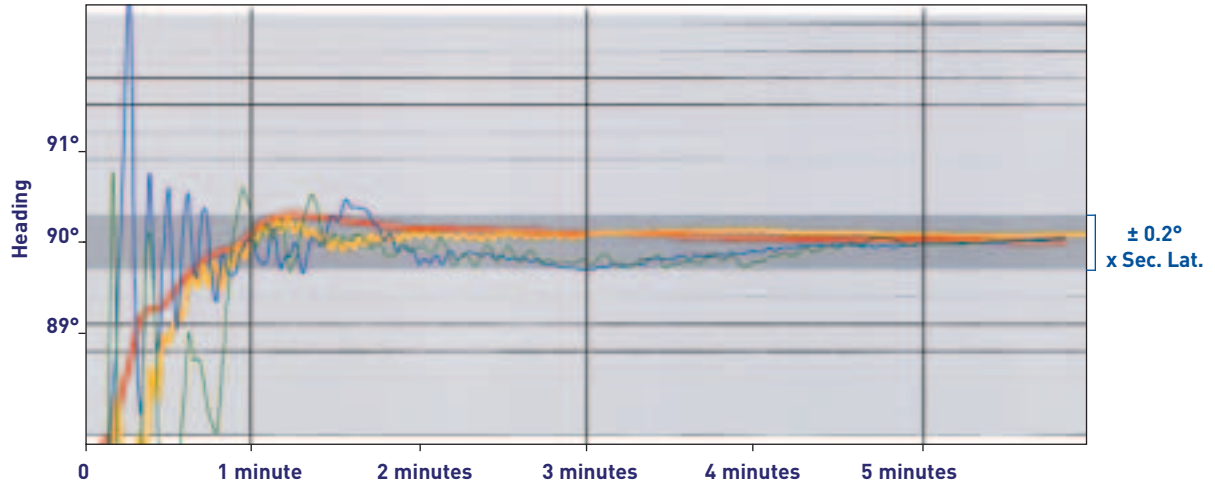
- No heave build-up: heave stays stable during turns without the aid of external sensors
- Easy integration: OCTANS interfaces all multibeam and single beam echosounders, ADCPs and survey packages
OCTANS emulates all existing motion sensors and gyrocompasses
- Monitoring of up to 3 points (lever arms / angular offsets)
- No external control unit

TYPICAL APPLICATIONS

- Hydrographic, multibeam survey
- Offshore works
- ROV, AUV, towfish navigation and positioning
- Ships

PROVEN RECORDS

SETTLING TIME AT SEA

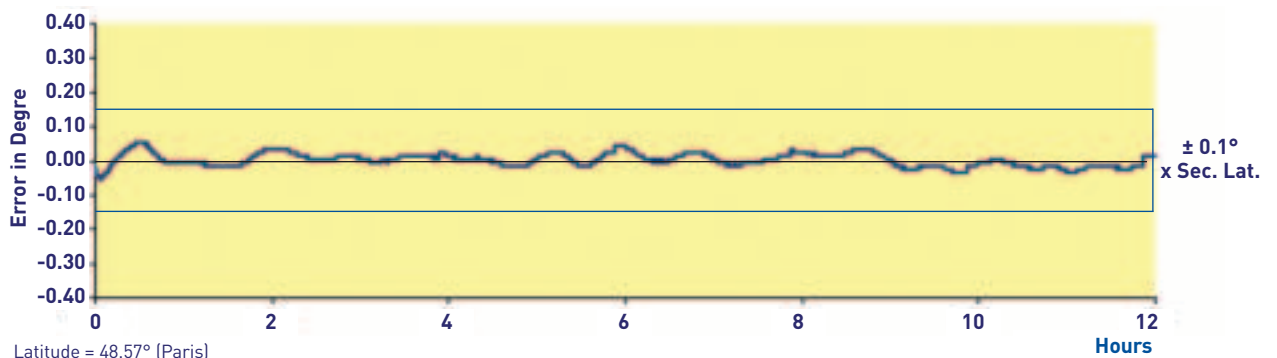


Latitude = 48.57° (Paris)

Heading convergence curves:

- Static Conditions
- Roll and Pitch $\pm 5^\circ$, T = 6 s
- Roll and Pitch $\pm 10^\circ$, T = 6 s
- Roll and Pitch $\pm 20^\circ$, T = 6 s

HEADING STABILITY



Latitude = 48.57° (Paris)

Static stability curve over 12 hours: Difference between reference baseline and OCTANS heading

Gyrocompas & motion sensor

Heading

Dynamic accuracy	± 0.2°	Secant latitude
Settle point error	± 0.1°	Secant latitude
Repeatability	± 0.025°	Secant latitude
Resolution	0.01°	
Settling time (static conditions)	< 1 minute (full accuracy)	
Settling time at sea (*)	< 3 minutes (full accuracy)	
Speed compensation	No limitation	
Latitude range	No limitation	

Heave / Surge / Sway

Accuracy	5 cm or 5% (whichever is highest)
Heave motion periods	0.03 to 1000 s (tunable)

Roll / Pitch

Dynamic accuracy	0.01° (independent from attitude)
Range	No limitation (-180° to 180°)
Follow-up speed	Up to 500°/s
(*) Whatever sea-state	(Secant latitude = 1 / cosine latitude)

Environment

Vibrations	1 g sine (5 to 50 Hz)
Shocks Operating / Survival	30 g 6 ms / 50 g 11 ms
MTBF	30 000 hours
Operating / Storage Temperature	-40°C to +60°C / +80°C

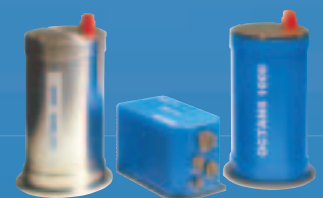
OCTANS surface unit

Housing (L x W x H)	280 x 136 x 150 mm
Weight in air	4,8 Kg
Water proof	IP66
Material	Aluminium
Mounting / Connectors	3 off M6 Holes / Souriau military
Inputs	3 serial / 2 analog (16 bits / ± 15V) / 2 pulses
Outputs	3 serial / 4 analog (14 bits / ± 10V) / 2 pulses
Power supply / consumption	24V DC / 12W

OCTANS subsea units	OCTANS 1000	OCTANS 3000	OCTANS 3000 Ti	OCTANS 6000
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Material	Aluminium	Duplex Steel	Titanium	Titanium
Depth rating	1000 m	3000 m	3000 m	6000 m
Weight in air / water (kg)	10 / 2	25 / 17	12 / 5	18 / 9
Body (Ø x H mm)	179 x 318	179 x 318	173 x 322	180 x 334
Base plate(Ø x H mm)	209 x 9	209 x 9	209 x 11	NA
Mounting / Connector	6 off M6 Holes / 16-Pin MCBH16 M Subconn			
Input	1 serial			
Outputs	1 serial / 4 analog (14 bits / ± 10 V)			
Power supply / consumption	24V DC / 12W			

Specifications subject to change without notice





IXSEA OCEANO

IXSEA OCEANO specialises in the design, manufacture and market of high-performance gyroscopes and underwater acoustics. It is the leading manufacturer of world-wide known products OCTANS (AHRS), PHINS, POSIDONIA (USBL system) and Acoustic Releases for shallow and full ocean depth operations. Our products are used by the offshore oil and gas industry, defense agencies, the scientific institutes and ports & harbours for navigation, accurate survey and positioning, mooring recovery and subsea and marine offshore constructions applications.

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