



PHINS

INERTIAL NAVIGATION SYSTEM

PHINS, Photonic Inertial Navigation System outputs position, heading, roll, pitch, depth, velocity, and heave. Its high accuracy inertial measurement unit is based on iXSea's FOG technology coupled with an embedded digital signal processor that runs an advanced Kalman filter.

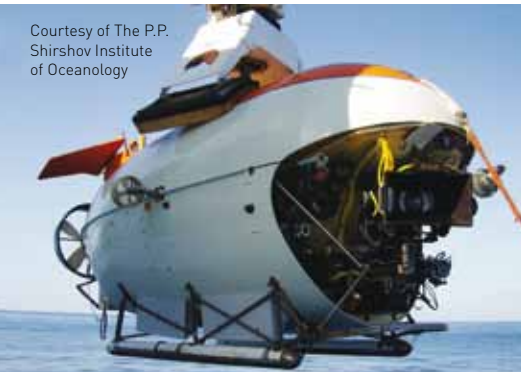
FEATURES

- All-in-one high-accuracy 3D positioning with heading, roll and pitch
- Fiber Optic Gyroscope (FOG), unique strap-down technology
- Multiple interfaces (DVL, EM log, GPS and depth sensor)
- Compact, lean and reliable

BENEFITS

- Complete navigation unit
- No spinning element hence maintenance free
- Versatile
- Appropriate for all underwater vehicles

Courtesy of The P.P. Shirshov Institute of Oceanology



Courtesy of Subsea 7



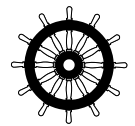
Courtesy of Net Marine



APPLICATIONS • Surface navigation for frigates, MCMV and fast patrol boats • AUV • ROV • HOV • SDV

PHINS

TECHNICAL SPECIFICATIONS



IMO Certified
N° 19110/A1 EC
N° 19183/A1 EC

PERFORMANCE

Position accuracy ⁽¹⁾

With GPS	Three times better than GPS accuracy
With USBL/LBL (Subsea Applications)	Three times better than USBL/LBL accuracy
With DVL	0.1% of travelled distance
No aiding for 2 minutes	3 m
No aiding for 5 minutes	20 m
Pure inertial mode	0.6 Nm/hr

Heading accuracy ⁽²⁾⁽³⁾

With GPS	0.01 deg secant latitude
With USBL/LBL/ DVL (Subsea Applications)	0.02 deg secant latitude

Roll and Pitch dynamic accuracy ⁽²⁾

Heave accuracy	0.01 deg
	5 cm or 5% (whichever is greater)

OPERATING RANGE / ENVIRONMENT

Operating / Storage Temperature	-20 to 55 °C / -40 to 80 °C
Rotation rate dynamic range	Up to 750 deg/s
Acceleration dynamic range	± 15 g
Heading / Roll / Pitch	0 to +360 deg / ±180 deg / ±90 deg
MTBF (computed/observed)	40,000 hours / 80,000 hours
No warm-up effects	
Shock and Vibration proof	

PHYSICAL CHARACTERISTICS

Dimensions (L x W x H)	180 x 180 x 160 mm
Weight in air	4.5 kg
Water proof	IP66
Material	Aluminium

INTERFACES

Serial RS232/RS422 port	5 inputs / 5 outputs / 1 configuration port
Ethernet port ⁽⁴⁾	UDP / TCP Client / TCP server
Pulse port ⁽⁵⁾	4 inputs and 2 outputs
Sensors supported	GPS, USBL, RAMSES, LBL, DVL, DEPTH, CTD/SVP
Input/Output formats	Industry standards: NMEA0183, ASCII, BINARY
Baud rates	600 bauds to 115.2 kbaud
Data output rate	0.1 Hz to 200 Hz
Power supply	24 VDC
Power consumption	15 W

(1) CEP: 50 % circular Error Probability. DVL aiding position accuracy is dependent on DVL performances.

(2) RMS values

(3) Secant latitude = $1 / \cosine \text{ latitude}$

(4) All input /output serial ports are available and can be duplicated on Ethernet ports

(5) Use GPS PPS pulse for accurate time synchronization of PHINS

Specifications subject to change without notice