



## PHINS 6000

### HIGH PERFORMANCE SUBSEA INERTIAL NAVIGATION SYSTEM FOR DEEP WATER

**PHINS 6000** is a subsea inertial navigation system providing position, true heading, attitude, speed, depth and heave. Its high-accuracy inertial measurement unit is coupled with an embedded digital signal processor that runs an advanced Kalman filter. **PHINS DVL** Ready is pre-assembled and pre-calibrated with a Doppler Velocity Log version making the system easy to install and ready to use for more precise navigation.

#### FEATURES

- All-in-one 3D positioning with heading, roll and pitch
- Fiber-Optic Gyroscope (FOG), unique strap-down technology
- Multiple aiding options (DVL, USBL, LBL, RAMSES, GPS, depth sensor)
- DVL Ready option available
- RAMSES option available (tight coupled acoustic aiding)

#### BENEFITS

- Accurate and georeferenced position + attitude at high frequency
- No spinning element hence maintenance free
- Flexible & scalable configuration for all deployment scenarios
- Immediate availability and performance for all vehicles
- Corrosion-free housing for water depth up to 6,000 m
- Ultimate sub-metric performance using sparse array transponders and on-the-fly calibration

**APPLICATIONS** • ROV and AUV navigation • Towfish navigation • Metrology

- Precise positioning • Out-of-straightness survey

Courtesy of Oceaneering



Courtesy of Ifremer



# PHINS 6000

## TECHNICAL SPECIFICATIONS



### PERFORMANCE

<b>Position accuracy</b> <sup>(1)</sup>	
With USBL/LBL	Three times better than USBL/LBL accuracy
With DVL	0.1% of travelled distance
No aiding for 1 min/2 min	0.8 m/ 3.2 m
<b>Heading accuracy</b> <sup>(2)(3)</sup>	
With GPS	0.01 deg secant latitude
With DVL/USBL/LBL	0.02 deg secant latitude
Roll and Pitch accuracy <sup>(2)</sup>	0.01 deg
Heave accuracy	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)	40,000/80,000 hours
No warm-up effects	
Shock and Vibration proof	

### PHYSICAL CHARACTERISTICS

Depth rating (m)	Material	Weight in air/water [kg]	Housing dimensions (Ø x H mm)	Connector	Mounting
6000	Titanium	23/13	255 x 288	3 x 12 pin 1 x 19 pin 1 x 26 pin SEACON MINI-CON	6 Ø 6.5 holes
6000 «DVL Ready»	Titanium	48,5/28,5 (WHN300K6, WHN600K6) 43,7/27 (WHN1200K6)	298 x 543 (WHN300/600) 298 x 542 (WHN1200)	3 x 12 pin 1 x 19 pin 1 x 26 pin SEACON MINI-CON	6 Ø 11 holes

### INTERFACES

RS 232/ RS 422	5 inputs/5inputs/1configuration port
Pulse port <sup>(4)</sup>	2 inputs
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 V DC
Power consumption	< 20 W

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

(2) RMS values

(3) Secant latitude = 1 / cosine latitude

(4) Input GPS PPS pulse for accurate time synchronization of PHINS6000

Specifications subject to change without notice