

# Phins Subsea

FOG-based high-performance subsea inertial navigation system for deep water

Phins Subsea 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 Subsea can be 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 high-accuracy 3D positioning with heading, roll and pitch
- FOG, unique strap-down technology
- Multiple aiding sensors available: (DVL, USBL, LBL, RAMSES, GPS, depth sensor)
- Options: DVL or RAMSES easy coupling
- Ethernet, web server (GUI)

## BENEFITS

- High grade INS performance
- High reliability and maintenance free
- Rugged design for water depths up to 6,000 m
- Ultimate sub-metric performance using sparse array transponders and on-the-fly calibration
- Ease of use and quick installation

## APPLICATIONS

- AUV navigation
- Towfish navigation
- Metrology
- Precise positioning
- Out-of-straightness survey

## TECHNICAL SPECIFICATIONS

### Performance

#### Position accuracy

With USBL / LBL	Three times better than USBL / LBL
With DVL	0.05% of traveled distance CEP 50
No aiding for 60s / 120s	0.8 m / 3.2 m CEP 50

#### Heading accuracy

With GPS	0.01 deg secant latitude RMS <sup>(1)</sup>
With DVL	0.02 deg secant latitude RMS <sup>(1)</sup>
Roll and pitch dynamic accuracy (no aiding)	0.01 deg RMS

### Operating range/enviroment

Operating / storage temperature	-20°C to 55 °C / -40°C 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 (observed)	100 000 hours
Depth	6 000 m

### Physical characteristics

	without DVL	with RDI DVL
Material	Titanium	Titanium
Weight in air / water	23 / 13 kg	43,7-48.5 / 27-28.5 kg
Mounting	6 Ø 6.5 holes	6 Ø 11 holes
Dimensions (L x W x H)	Ø 255 x 288 mm	Ø 298 x 543 mm
Connector	3 x 12 pins, 1 x 19 pins, 1 x 26 pins SEACON	

### Interfaces

Serial	RS422 or RS232
Ethernet	100 MBit - UDP / TCP server / TCP client / web server (GUI)
Pulse	3 inputs / 2 outputs
Inputs / outputs	Configurable 7i / 5o - Pulse <sup>(2)</sup> 3i / 2o - Configuration port
Baud rates	Up to 460 kbaud
Data output rate	0.1 Hz to 200 Hz
Power supply / consumption	24 VDC (20 - 32 V) / < 20 W

(1) Secant latitude = 1/cosine latitude

(2) Input GPS PPS pulse for accurate time synchronization of PHINS 6000