

# Phins

## FOG based high-performance inertial navigation system

Phins is an Inertial Navigation System (INS) providing position, true heading, attitude, speed, depth and heave. Its high-accuracy inertial measurement unit is based on Exail's Fiber-Optic Gyroscope (FOG) technology coupled with an embedded digital signal processor that runs an advanced Kalman filter.



### FEATURES & BENEFITS

- IMO certified navigation gyro
- All-in-one high-accuracy 3D positioning with heading, roll and pitch
- Compact, light and reliable
- FOG unique strap-down technology
- Multiple aiding available:  
DVL, EM log, GPS, USBL, LBL and depth sensor
- Ethernet, web server (GUI)
- NTP synchro capability
- IMU option for high accuracy platform stabilization
- Low latency
- Static and dynamic alignment modes, with and without GNSS
- 4Gb embedded data logger
- Versatile I/O options for an easy integration
- High reliability and maintenance free
- No ITAR component inside
- 24/7 worldwide technical assistance

### APPLICATIONS

- Highly demanding civil or defense vessels
- Underwater vehicles

## TECHNICAL SPECIFICATIONS

### Performance

Heading <sup>(1)</sup> (°)	0.01
Roll & Pitch <sup>(2)</sup> (°)	0.01
Heave/Smart Heave <sup>(3)</sup>	5 cm or 5% / 2 cm or 2%

### Position accuracy

With GPS	Three times better than GPS
With USBL/LBL (subsea applications)	Three times better than USBL / LBL
With DVL	0.1% of traveled distance (CEP 50)
No aiding for 2 min / 5 min	3 m / 20 m (CEP 50)
Pure inertial mode	0.6 nm / hour (CEP 50)

### Operating range/Environment

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
MTBF	150,000 hours (System observed) 500,000 hours (FOG + Accelerometers)
Heading/roll/pitch	0 to +360 deg / ±180 deg / ±90 deg
Shocks	27g / 15ms damper shocks

### Physical characteristics

Dimensions (L x W x H)	180 x 180 x 162 mm
Weight in air	5.5 kg
Material	Aluminum

### Interfaces

Serial	RS422 or RS232
Ethernet	100 Mbit - UDP / TCP server / TCP client / web server (GUI) / NTP synchro
Pulses	PPS input for < 100µs time synchronization
Inputs/outputs	Configurable 7i / 5o - Pulses 4i / 2o - Configuration port
Baud rates	Up to 460 kbaud
Data output rate	0.1 Hz to 200 Hz real measurements
Power supply/consumption	24 VDC (20-32 V) / 20 W typ. @24V/23°C (unloaded)

(1) Secant latitude = 1/cosine (latitude)

(2) Typical RMS performance

(3) Whichever is greater for wave periods up to 30 seconds. Smart Heave is delayed by 100 s fixed value. Real-time heave accuracy is 5 cm or 5% whichever is greater for period up to 25s.

All specifications subject to change without notice