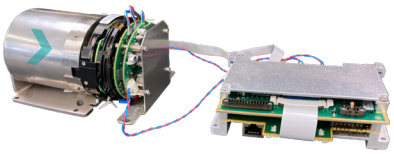
Phins Compact Series

Most Compact Inertial Navigation System for AUV's



Phins C3

Phins 9 Compact

Phins C7

Based on FOG technology mastered by Exail for over 30 years, Exail offers a complete range of high-grade inertial navigation systems dedicated to unmanned vehicles.

FEATURES

- Most compact high grade INS
- Low power consumption for an increased autonomy
- Software and algorithm dedicated for subsea operations
- Genuine strapdown solid-state system

BENEFITS

- Stealth autonomous navigation
- Very accurate heading., roll, pitch, speed and position
- Common interfaces
- Seamless integration
- Open architecture with 3rd party brand sensors

MAIN REFERENCES

- Bluefin
- Kongsberg
- Huntington Ingalls Industries
- L3 Harris
- Exail Robotics
- SAAB
- Woods Hole Oceanographic Institution
- Teledyne Gavia
- Fugro
- BAE systems
- ISE
- Bedrock
- RTS
- Shearwater

Proven and reliable expertise

Exail has been providing inertial navigation systems and acoustic positioning systems for AUVs for more than 15 years. This almost unique experience allows us to provide the widest range of systems fitting all needs for AUVs with unrivaled performance and a global solution approach.

Seamless design for all AUV types

Phins Compact Series has been designed to offer the AUV industry players the ability to choose an inertial navigation system adapted to their vehicle, whatever their size and mission, from accurate navigation to survey grade.

Ease of use, reliability and availability

Phins Compact Series is fully scalable systems with a similar architecture and interface. The series includes the same algorithm and software, which enables seamless re-use of the control system on any vehicles, sizes or types, via modern interfaces such as Ethernet, helping to reduce integration and non-recurring costs.

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TECHNICAL SPECIFICATIONS

Performance / Characteristics

	Phins Compact C3	Phins 9 Compact	Phins Compact C7
Position accuracy[1]			
With GNSS/USBL/LBL	Three times better than GNSS / USBL / LBL	Three times better than GNSS / USBL / LBL	Three times better than GNSS / USBL / LBL
DVL-Aided straight line performance	0.20 %TD (CEP 50)	0.1%TD (CEP 50)	0.05 %TD (CEP 50)
DVL-aided optimal performances in typical conditions	0.04 %TD (CEP 50)	0.02 %TD (CEP 50)	0.01 %TD (CEP 50)
No aiding for 60s / 120s	0.6m / 2.2m (CEP50)	0.2m / 0.6 m (CEP50)	0.06m / 0.3m (CEP50)
Heading accuracy [2][3][4]			
With GNSS (or USBL/LBL) & DVL	0.10 deg secant latitude RMS	0.04 deg secant latitude RMS	0.010 deg secant latitude RMS
With GNSS or DVL or USBL/LBL		0.07 deg secant latitude RMS	0.025 deg secant latitude RMS
Roll and pitch dynamic accuracy (no aiding)	0.05 deg RMS	0.01 deg RMS	0.01 deg RMS

Operating range / Environment

Operating / storage temperature	-20 to 55°C / -40 to 80°C	-20 to 55°C / -40 to 80°C	-20 to 55°C / -40 to 80°C
Rotation rate dynamic range	Up to 750° /Sec	Up to 750° /Sec	Up to 750° /Sec
Acceleration dynamic range	+/-5 g	+/-30 g	+/-30 g
Heading /roll/ pitch ranges	0 to +360 deg / ±180 deg / ±90 deg	0 to +360 deg / ±180 deg / ±90 deg	0 to +360 deg / ±180 deg / ±90 deg
MTBF	150,000 hours (System observed) 500,000 hours (FOG + Accelerometers)		

Physical Characteristics

Material	Aluminium	Aluminium	Aluminium
Weight in air /water	1.6 kg	4.7 kg	3.8 kg
Connector	1 x 26 pins, 1 x 6 pins Micomatic, 1 RJ45	1 x 21 pins, 1 x 31 pins, 3 x 15 pins AXON Micro D	1 x SUB-D 26 pins, 1 RJ45

(1) CEP: 50% circular error probability. DVL aiding position accuracy is dependent on DVL performances.
(2) Typical performances, dependent on external sensor characteristics
(3) RMS values.
(4) Secant Latitute= 1 / Cosine Latitude

Interfaces

	Phins Compact C3	Phins 9 Compact	Phins Compact C7
Sensors	GNSS / USBL / LBL / DVL / EMLOG / DEPTH / CTD / SVP		
Serial	5 ports: RS232	5 ports: RS422 or RS232	2 ports: RS232
Ethernet	10/100 Mbits, UDP/TCP (client / server) / web server (GUI)		
Pulse	2 inputs / 1 output	3 inputs / 2 outputs	1 input / 1 output
Input/ output	Configurable 7i / 5o, Industry standards: NMEA, ASCII, Exail STD BIN etc. more than 130 output protocols		
Baud Rate	921.6 kbps	921.6 kbps	921.6 kbps
Data output rate	0.1 Hz to 200 Hz	0.1 Hz to 200 Hz	0.1 Hz to 200 Hz
Power supply / consumption [5]	24 VDC (20 - 32 V) / < 12 W	24 VDC (20 - 32 V) / < 18 W	24 VDC (20 - 32 V) / < 15 W
Embedded Datalogger	4 GB	4 GB	4 GB

(5) Phins Compact Series power consumption, not taking into account external sensors, typical value @24V and ambient temperature.