Phins E

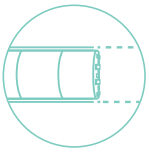
High-performance inertial navigation system for civil engineering

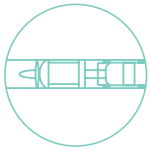
Phins is an Inertial Navigation System (INS) providing 3D position, true heading, attitude, and speed. Its high accuracy inertial measurement unit is based on Exail's technology coupled with an embedded digital signal processor that runs an advanced Kalman filter. Phins E is a product with dedicated algortithms for civil engineering and industrial applications.

FEATURES & BENEFITS

- All-in-one high accuracy 3D orientation with true heading, roll and pitch
- Robust to harsh environments
- FOG unique strap-down technology
- Multiple aiding available: water level, GNSS, odometer
- Compact, lightweight and reliable
- Ethernet, web server (GUI)
- IMU option for high accuracy platform stabilization
- Static and dynamic alignment modes, with and without GNSS
- Embedded data logger
- Fast alignment (no aiding sensor)
- Versatile I/O options for integration
- Embedded web user interface
- Low latency for real time control loops
- Maintenance free
- ITAR-free
- Postprocessing capability with Delph INS software option
- Restore Attitude mode
- Restore Position mode

APPLICATIONS


Tunneling and mining


Pipe inspection


Industrial vehicle


Drilling

2023-04 | V001

contact@exail.com | www.exail.com
EMEA +33 1 30 08 88 88 | Americas +1 888 600 7573 | APAC +65 6747 4912

exail

TECHNICAL SPECIFICATIONS

Performance

Heading accuracy with GNSS during navigation	0.01° seclat RMS [1]
Heading accuracy in autonomous mode but with rotations during alignment	0.05° seclat RMS [1]
Heading accuracy after 15 minutes in static autonomous mode	0.083° seclat RMS [1]
Heading accuracy after 5 minutes in static autonomous mode	0.25° seclat RMS [1]
Roll	0.01° RMS
Pitch	0.01° RMS
Resolution for Heading/Roll/Pitch	0.001°
Range	Heading: 0° to 360° Roll: -180° to +180° Pitch: -90° to +90°

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
Special conditions	No warm-up effects, shock and vibration proof

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)
External aiding sensors	2 GNSS, 1 Odometer (RS232/RS422/Ethernet protocol), 1 Depth
Internal aiding sensors	Various ZUPT modes and vehicle models
INS performance	Highly depends on user configuration and aiding sensors

(1) Secant latitude = 1/cosine latitude

contact@exail.com | www.exail.com
EMEA +33 1 30 08 88 88 | Americas +1 888 600 7573 | APAC +65 6747 4912

exail