

# Hydrins

## Navigation-grade INS for hydrographic survey

Hydrins is a high-performance Inertial Navigation System (INS) based on Exail Fiber-Optic Gyroscope (FOG) technology, electronics, and embedded processing. Compact and lightweight, it delivers highly accurate real-time position, heading, attitude, motion (heave, surge, sway), and speed data, for direct spatial referencing.



### FEATURES & BENEFITS

- IMO certified navigation gyro
- High-accuracy 3D positioning with heading, roll and pitch
- Compact, lightweight, and reliable
- Benefiting from FOG (Fiber-Optic Gyroscope) unique strap-down technology
- Compatible with all GNSS receivers
- Simplified Integration with a single GNSS antenna setup
- Automatic GNSS drop-out / multipath management
- Realtime heave and delayed Smart Heave™
- Permanent quality data thanks to Exail Delph INS post-processing software
- Ethernet, web server (GUI)
- Low latency for real time control loops
- 4Gb embedded data logger
- Versatile I/O options for an easy integration
- Maintenance-free
- ITAR-free
- 24/7 worldwide technical assistance

### APPLICATIONS

- Port and harbour maintenance
- Seafloor characterization
- Bathymetric survey
- Platform stabilization
- Offshore construction engineering

## TECHNICAL SPECIFICATIONS

### Performance

|                                                |                         |             |              |                          |                          |                          |
|------------------------------------------------|-------------------------|-------------|--------------|--------------------------|--------------------------|--------------------------|
| Heading with GNSS <sup>(1)</sup>               | 0.01° RMS               |             |              |                          |                          |                          |
| Heading                                        | 0.05° seclat RMS        |             |              |                          |                          |                          |
| Roll & Pitch with GNSS <sup>(1)</sup>          | 0.0025° RMS             |             |              |                          |                          |                          |
| Roll & Pitch                                   | 0.01° RMS               |             |              |                          |                          |                          |
| Heave/Smart Heave <sup>(2)</sup>               | 5 cm or 5% / 2 cm or 2% |             |              |                          |                          |                          |
| <b>Correction type with GNSS<sup>(3)</sup></b> | <b>SPS Natural</b>      | <b>SBAS</b> | <b>DGNSS</b> | <b>PPP<sup>(4)</sup></b> | <b>RTK<sup>(5)</sup></b> | <b>PPK<sup>(6)</sup></b> |
| Horizontal accuracy (X,Y) (m)                  | 1.20                    | 0.60        | 0.30         | 0.06                     | 0.006<br>+0.5 ppm        | 0.006<br>+0.5 ppm        |
| Vertical accuracy (Z) (m)                      | 1.90                    | 0.80        | 0.50         | 0.09                     | 0.01 +1 ppm              | 0.01 +1 ppm              |
| <b>GNSS outage<sup>(4)</sup> of 60 seconds</b> |                         |             |              |                          | <b>RTK<sup>(5)</sup></b> | <b>PPK<sup>(6)</sup></b> |
| Horizontal accuracy (X,Y) (m)                  |                         |             |              |                          | 0.30                     | 0.05                     |
| Vertical accuracy (X,Y) (m)                    |                         |             |              |                          | 0.30                     | 0.05                     |

### 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)<br>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                           |
| 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                |
| External aiding sensors  | 2 GNSS                                                                    |
| 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) Required navigation with GNSS (1m sd) for at least 30 minutes with 2 turns of at least 60°

(2) 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.

(3) Actual results depending on the quality of the GNSS system used, satellite configuration, atmospheric conditions and other environmental effects.

(4) Precise Point Positioning (requires service subscription).

(5) Real-Time Kinematic, up to 40km from base station.

(6) Post Processing Kinematic using Delph INS post-processing software (smart coupling of INS and GNSS in forward/backward).

All specifications subject to change without notice