Marins Series enables stealth autonomous navigation for submarines and surface vessels. It provides very accurate heading, roll, pitch, speed and position, included in GNSS-denied environments. Marins Series is based on the iXblue FOG technology and offers five grades of performance. This technology is proven for superior reliability and performance. iXblue high-performance navigation systems are chosen by world leading navies.

**FEATURES**
- Genuine strapdown solid-state silent system
- High baud rate / low latency
- Fully configurable
- Web-based built-in interface
- IMO/IMO HSC certified
- MIL STD qualified: 810/461
- Free of ITAR component

**BENEFITS**
- Autonomous navigation without GNSS
- Low cost of ownership and high availability
- Stealth: no radiated noise during operation
- Flexible and evolutive interface
- Easy to set up and to operate
- Full range of INS performances

**FOG BENEFITS**
- Silent True Solid State Technology
- Maintenance Free
- Unrivalled reliability (Sensor core MTBF 500,000 hours)
- No lifetime limitation
- Very low power consumption
- Resistant to extreme shock and vibration

**FIBER-OPTIC GYROSCOPE TECHNOLOGY**
Ultimate Performance and Reliability

The iXblue Group is recognized throughout the world for its pioneering work on the development of the ultimate-performance fiber-optic gyroscope (FOG). Gyroscopes are the key sensor of the performance of an INS.

The FOG is an extremely high performance rotation sensing device based on the Sagnac Effect. A FOG uses optical waves propagating in a fiber-optic coil to accurately measure a rotation rate. This apparently simple design takes full advantage of the reciprocity principle in the propagation of light which enables a perfect device to be created from imperfect components. FOG is the new leading technology for the naval industry.
TECHNICAL SPECIFICATIONS

Performance

<table>
<thead>
<tr>
<th></th>
<th>M3</th>
<th>M5</th>
<th>M7</th>
<th>M9</th>
<th>M11</th>
</tr>
</thead>
<tbody>
<tr>
<td>Position accuracy¹[1] No aiding</td>
<td>1 nm / 12h</td>
<td>1 nm / 24h</td>
<td>1 nm / 72h</td>
<td>Classified</td>
<td>Classified</td>
</tr>
<tr>
<td>Velocity (RMS)</td>
<td>0.6 knot</td>
<td>0.6 knot</td>
<td>0.4 knot</td>
<td>0.4 knot</td>
<td>0.4 knot</td>
</tr>
<tr>
<td>Heading accuracy (RMS)²</td>
<td>0.01 deg seclat</td>
<td>0.01 deg seclat</td>
<td>0.01 deg seclat</td>
<td>0.01 deg seclat</td>
<td>0.01 deg seclat</td>
</tr>
<tr>
<td>Roll/ pitch accuracy (RMS)²</td>
<td>0.01 deg</td>
<td>0.01 deg</td>
<td>0.01 deg</td>
<td>0.01 deg</td>
<td>0.01 deg</td>
</tr>
<tr>
<td>Settling time</td>
<td>5 min for data availability / 15 min for full attitude</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Environmental characteristics

Operating / storage temperature 0°C to 55 °C / -40 °C to 80 °C
Heading / roll / pitch 0 to +360 deg / ±180 deg / ±90 deg
Environment qualification MIL STD 810 E / 461 D / 167 / 901E [4]
Ingress protection IP66

Physical characteristics (bare unit / with interface plate)

<table>
<thead>
<tr>
<th></th>
<th>M3/M5</th>
<th>M7/M9</th>
<th>M11</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight</td>
<td>28 kg</td>
<td>40 kg</td>
<td>62 kg</td>
</tr>
<tr>
<td>Dimensions (L x W x H) in mm</td>
<td>433 x 324 x 329</td>
<td>500 x 400 x 344</td>
<td>590 x 500 x 403</td>
</tr>
</tbody>
</table>

Integrated logistic services

Calibration auto-calibration at start-up
MTBF (operational) 150,000 hours
MTTR (swap out) 25 min
Support 24/7

Interfaces

Serial RS422 or RS232
Ethernet 100 MBit - UDP / TCP server / TCP client / web server (GUI)
Time synchronization ZDA, PPS Trigger, NTP
Pulse PPS Trigger
Input/output Configurable 7 input/ 5 output+ Pulse 4 input / 2 output - Configuration port
Sensors supported GNSS, Depth sensors, Speed sensors
Input/output format Industry standards: NMEA0183, ASCII, BINARY, configurable output messages
Baud rate 600 baud to 460 kbaud
Data output rate 0.1 Hz to 200 Hz
Power supply 24 VDC
Power consumption < 25 W

¹TRSM | ²Secant latitude /cosine latitude | ³Optional | Specifications subject to change without notice | ⁴with dedicated shockmount