Pulse-40
Inertial Measurement Unit

Excellent Performance in Harsh Conditions in the Smallest Package

Pulse-40 brings your navigation system to the tactical grade. Performance is guaranteed in all weathers and in high vibration conditions. Make your system more reliable and save weight, power, and budget for your core business.

Enhance your navigation system accuracy and resilience with tactical grade miniature IMU
Pulse-40 brings your navigation system to the tactical grade. Performance is guaranteed in all weathers and in high vibration conditions. Make your system more reliable and save weight, power, and budget for your core business.

Stabilize your system with high quality, reliable miniaturized IMU
Pulse-40 is perfect for high frequency dynamics and highly vibrating environments. Its very low noise decreases impact over the control system. Our production processes and calibration ensures consistency and repeatable behavior.

- High bandwidth (500Hz)
- High data rate (2KHz)
- < 2ms motion to output latency
- Ultra low noise gyro (0.08°/√h)
- Best in class Vibration Error (VRE)
- Calibrated from -40 to 85°C

- Reliable in all conditions
- Continuous Built-in-test (CBIT)
- External clock synchronization
- Excellent bias instability (0.8°/h)
- Shocks and vibrations qualified to MIL-STD 810G

NAVIGATION

STABILIZATION

6 DOF IMU
TACTICAL GRADE
0.8°/h | 6µg

No Export Restriction
2-year Warranty

SBG SYSTEMS
Selection of the most reliable accelerometers & gyroscopes able to cope with SBG Systems’ high quality requirements.

Aluminum enclosure ensures optimal performance in shocks or vibrating conditions, and maintains sensor alignment over time.

**HIGH-END MEMS**

**ROBUST ENCLOSURE**

**AUTOMATED CALIBRATION**

-40°C to 85°C

**Accelerometers & gyroscopes compensation**

- Bias and scale factor over full temperature range
- Non-linearity
- Cross-axis and misalignments effect

**Benefits**

- Maximized IMU performance
- Minimized human error risks
- Highly scalable & repeatable process

**SCREENING PROCESS**

2 axis table

- CALIBRATION VALIDATION
- ACCEPTANCE TEST

**ACCELERATED AGEING**

to check sensor drift

- PASS
- FAIL

**IMU which fail is scraped**

**DELIBERATING HIGH QUALITY IMU**

with its own digital calibration report

- Calibration report available online with no extra fee!
- 2 years warranty in standard.

- Quality & Consistency
- Leaflet Performance Guaranteed
- Reliability in all Conditions

THIS IS HOW WE BUILD TRUST
Specifications

1-sigma errors over full temperature range [-40 to 85°C]

**GYROSCOPES & ACCELEROMETERS**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Gyroscope</th>
<th>Accelerometer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measurement range</td>
<td>± 430°/s, ± 2000°/s (4)</td>
<td>±40 g</td>
</tr>
<tr>
<td>Scale factor error (4)</td>
<td>1.500 ppm</td>
<td>300 ppm</td>
</tr>
<tr>
<td>Non-linearity error (4)</td>
<td>50 ppm of FS</td>
<td>50 ppm of FS</td>
</tr>
<tr>
<td>Random walk (2)</td>
<td>0.08°/√h</td>
<td>0.02 m/s/√h</td>
</tr>
<tr>
<td>Bias instability (2)</td>
<td>0.8°/h</td>
<td>6 µg</td>
</tr>
<tr>
<td>One-year bias repeatability (4)</td>
<td>250°/h</td>
<td>1.500 µg (6)</td>
</tr>
<tr>
<td>Orthogonality</td>
<td>0.02°</td>
<td>0.01°</td>
</tr>
<tr>
<td>Bandwidth</td>
<td>480 Hz</td>
<td>480 Hz</td>
</tr>
<tr>
<td>Vibration Rectification Error (VRE)</td>
<td>0.2°/h/g²</td>
<td>0.03 mg/g²</td>
</tr>
</tbody>
</table>

(1) Error measured over a one year accelerated ageing process.
(2) Allan variance method.
(3) Bias > 1,250 µg to comply with export regulation.
(4) 2000°/s version is export controlled. Contact us for more information.

**MECHANICAL & ENVIRONMENTAL**

Mechanical dimensions 30 × 28 x 13.3 mm
Weight 12 g
Operating Temperature range -40 to 85°C
Non operating Temperature range -40 to 85°C
EMC EN 55032:2015, EN 61000-4-3, EN 61000-6-1, EN 55024
Operating Vibrations 10 g RMS [20 - 2 kHz] MIL-STD-810G
MTBF (computed) 50,000 hours

**ELECTRICAL**

Input Voltage [3.3 ; 5.5] V
Power consumption Typical @5V 0.3W

**COMMUNICATION**

Output baud rate Up to 4M bps
Output data rate Up to 2kHz
Digital serial Interface UART (LVTTL)

**SENSORS SPECIFICATION – ALLAN VARIANCE**

Preliminary version. All specifications subject to change without notice.
SBG Systems is a leading supplier of inertial motion sensing solutions since 2007. The company provides a wide range of inertial solutions from miniature to high accuracy. Combined with cutting-edge calibration techniques and advanced embedded algorithms, SBG Systems products are ideal solutions for industrial & research projects such as unmanned vehicle control, surveying applications, antenna tracking, and camera stabilization. Committed to highest quality standards, SBG Systems is an ISO 9001:2015 certified company.

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