MinIM®
MEMS Inertial Measurement Unit (IMU)

With over 130,000 MEMS units in service, UTC Aerospace Systems has now developed its next-generation IMU, meeting customer demand for cost effective and smaller, ultra-reliable IMU devices.

The new MinIM® is a ruggedised IMU that incorporates the latest capacitive technology and is less than 1/4 the size and weight of established production MEMS IMUs - at under 1 cubic inch in volume.

Its small form factor and low cost make MinIM® ideal for applications such as guided weapons, flight control systems, anti-tank weapons, small UAVs and troop navigation units.

UTC Aerospace Systems has a long and respected heritage in the design and development of inertial sensors and today specialises in Micro Electro-Mechanical Systems (MEMS) products.

- First MEMS IMU in military service
- Selected by over 60 customers worldwide - over 130,000 MEMS products delivered
- Used in missile and weapons' navigation, platform stabilisation and navigation
- Rigorous performance and simulated ageing ensures conformance to specification throughout life
## Key Characteristics

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Volume</td>
<td>1 in³ without mount</td>
</tr>
<tr>
<td>Mass</td>
<td>≤70 gram in typical housing</td>
</tr>
<tr>
<td>Power consumption</td>
<td>1.5W</td>
</tr>
<tr>
<td>Operating temperature</td>
<td>-40°C to +65°C extended -55°C to +85°C</td>
</tr>
<tr>
<td>Start-up time data range</td>
<td>500ms</td>
</tr>
<tr>
<td>Built-in-test</td>
<td>Continuous</td>
</tr>
<tr>
<td>Gyro operating range</td>
<td>±1000°/s axis 1, ±500°/s axis 2</td>
</tr>
<tr>
<td>Accelerometer operating range</td>
<td>±30g</td>
</tr>
<tr>
<td>Supply voltage</td>
<td>+5V DC</td>
</tr>
<tr>
<td>Electrical interface</td>
<td>PC</td>
</tr>
</tbody>
</table>

## Typical Performance

<table>
<thead>
<tr>
<th>Performance</th>
<th>Gyro</th>
<th>Accelerometers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bias repeatability</td>
<td>240°/hr</td>
<td>50 mg</td>
</tr>
<tr>
<td>Bias instability</td>
<td>12°/hr</td>
<td>1.5 mg</td>
</tr>
<tr>
<td>Random walk</td>
<td>1°/√hr</td>
<td>0.6m/s/√hr</td>
</tr>
<tr>
<td>Scale factor repeatability for ±1000°/s and ±35g ranges (1σ)</td>
<td>1,000 ppm</td>
<td>1,800 ppm</td>
</tr>
<tr>
<td>Bandwidth</td>
<td>Configurable</td>
<td>Configurable</td>
</tr>
</tbody>
</table>

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**Performance**

- **Tactical**
  - High performance gyro
  - Closed loop high performance accelerometer

- **High Performance**
  - High performance gyro
  - Open loop accelerometer performance

- **Medium Performance**
  - Gun Hard options available (20,000g)

- **Low Cost IMU**
  - Small form factor

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**MinIM®**

**Product Benefits**

- Full 6 DoF inertial measurement unit
- Latest capacitive technology
- Excellent performance in cubic inch form
- Gun-hard option, survivable to 16,000g
- Modular architecture to meet customer performance and price expectations
- Low noise

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**MinIM®**

**MEMS Inertial Measurement Unit (IMU)**

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**Atlantis Inertial Systems**

UTC Aerospace Systems

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**MinIM®**

UTC Aerospace Systems