Geo-MMS™ is a fully integrated LiDAR mapping payload for integration with small unmanned vehicles. The Geo-MMS includes an inertial navigation system coupled with a LiDAR sensor. Raw data from the integrated GPS, IMU and LiDAR sensors are recorded on the internal data recording device and can be post-processed using Geodetics’ Geo-PostProcessing package to directly geo-reference the LiDAR point clouds. Geo-MMS is available with a wide range of GPS and IMU sensors as well as both commercial and SAASM configurations.

**Geo-MMS™ Commercial**: Designed for civilian navigation applications (no ITAR restrictions)

**Geo-MMS™ SAASM**: Designed for applications that have a military SAASM GPS requirement

**Geo-MMS™ Features**
- Flexible mounting for different platforms including UAV, UAS, RPV, ground vehicles and robots
- Minimized sensor size and weight to meet payload restrictions (5 pounds minimum payload)
- Available with a many IMU’s to support a wide range of application requirements
- Centimeter-level position accuracy (dual-frequency RTK configuration)
- User interface to fully control individual and collective GPS, IMU, Laser setting
- Full post-processing support with GPS/IMU Geo-PostProcessing
- LAS file output

**Geo-MMS™ Applications**
- Intelligence, Surveillance and Reconnaissance (ISR)
- Situation Awareness
- UAV sense and avoid
- Asset management
- Coastal surveillance
- Hydrometric mapping
- Critical Oil & Gas infrastructure inspection
- DEM/DSM generation
- Indoor mapping capable (SLAM)

For all sales and technical-support related questions, please contact Geodetics, Inc. directly via:

P: 858.729.0872  F: 858.729.0874  E: info@geodetics.com
Point Cloud Geo-Referenced Accuracy

<table>
<thead>
<tr>
<th>IMU</th>
<th>GPS</th>
<th>RTK (Real-Time)</th>
<th>Autonomous (WAAS)</th>
<th>Post-Mission (DGPS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tactical</td>
<td>0.25cm</td>
<td>0.7m</td>
<td>10cm</td>
<td></td>
</tr>
<tr>
<td>Advanced</td>
<td>10cm</td>
<td>0.5m</td>
<td>5cm</td>
<td></td>
</tr>
</tbody>
</table>

Velodyne LiDAR

Velodyne VLP-16 Laser Scanner (PUCK)

- Range of 100m
- Up to 0.3 million points/second
- Compact footprint ~ Ø103mm x 72mm
- Dual return capability
- 360° horizontal field of view
- 30° (±15° up/down) vertical field of view
- Angular resolution (vertical) of 2°
- Angular resolution (horizontal/azimuth): 0.1° - 0.4°
- Rotation rate: 5 - 20 Hz

Geo-MMS™ Technical Specifications

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Commercial Configurations</th>
<th>SAASM Configurations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size / Weight / Power</td>
<td>40.32 in¹ (4.7x3.9x2.2) / 57 oz / 10 – 30 VDC @ 2 Amps min.</td>
<td>10 – 30 VDC @ 2 Amps min.</td>
</tr>
<tr>
<td>Environmental</td>
<td>MIL-810E, MIL-461 Compliant</td>
<td></td>
</tr>
<tr>
<td>Temperature Range</td>
<td>Specified: -20°C to +60°C</td>
<td>Operating: -40°C to +70°C</td>
</tr>
<tr>
<td>Interfaces</td>
<td>External power connector, TNC GPS antenna connectors, 1 Ethernet data port, 3 RS-232 serial ports, 1PPS output, 4 status LEDs.</td>
<td>External power connector, TNC GPS antenna connector, 1 Ethernet data port, 3 RS-232 serial ports, 1PPS output, 4 status LEDs, SAASM Keyload Connector, SAASM Zeroize button.</td>
</tr>
<tr>
<td>Real-Time Data Output</td>
<td>Navigation solutions at up-to 125 Hz. available via Ethernet, RS-232 or optional wireless data-link.</td>
<td></td>
</tr>
<tr>
<td>Data Recording/Logging</td>
<td>Navigation solutions, raw GPS, IMU and LiDAR (for post-processing with Geo-PostProcessing tools).</td>
<td></td>
</tr>
<tr>
<td>GPS Frequency Tracking</td>
<td>L1/L2</td>
<td>L1/L2 (P/Y Code)</td>
</tr>
<tr>
<td>Key Loading</td>
<td>N/A</td>
<td>DS-101</td>
</tr>
<tr>
<td>Safety &amp; Diagnostics</td>
<td>Internal safety and monitoring systems. Internal BIT with operator notification.</td>
<td></td>
</tr>
</tbody>
</table>

¹Accuracy is dependent on GPS satellite system performance, ionospheric conditions, satellite visibility, data-link and other factors.