TRIMBLE AP+ 30 LAND

NEXT GENERATION EMBEDDED GNSS-INERTIAL SOLUTION FOR ROBUST MOBILE MAPPING AND POSITIONING

The Trimble AP+ Land GNSS-inertial OEM system is comprised of next-generation compact, low-power hardware, with dual embedded survey-grade GNSS chipsets, an onboard inertial measurement unit (IMU), an external IMU, and the all-new Applanix IN-Fusion+™ GNSS-aided inertial firmware featuring Trimble ProPoint™ GNSS Technology.

INTEGRATE ONCE, USE MANY

The “Integrate once, use many” concept means a single hardware platform can be used to build a complete range of mapping systems. This consistency saves costs associated with design and integration.

THE BEST SOLUTION JUST GOT BETTER

The Trimble AP+ Land OEM solution is fully supported by the industry-leading Applanix POSPac® MMS post-processing software, featuring Post-processed Trimble CenterPoint® RTX™ for centimeter position accuracy without base stations, making it the ultimate solution for integrators wishing to produce a highly efficient mobile mapping system. For LiDAR integrators, the Trimble AP+ Land OEM is fully compatible with the POSPac MMS LiDAR QC Tools, which performs LiDAR to IMU boresighting and trajectory adjustment using the LiDAR point cloud.

Key Features

▶ “Integrate once, use many” concept means a single platform can be used to build a complete range of mapping systems, using the same design, which saves costs
▶ Reduced SWaP
  • 54% smaller footprint
  • 64% lighter
  • 75% less power
▶ Next generation, survey-grade GNSS receiver
▶ Two antenna heading support
▶ Next generation Applanix In-Fusion+™ GNSS-aided inertial firmware featuring Trimble ProPoint™ GNSS Technology
▶ Completely configurable

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### Technical Specifications

#### System Summary
- Applanix IN-Fusion™ GNSS-inertial integration firmware featuring Trimble ProPoint™ GNSS Technology
- Onboard IMU with solid-state MEMS inertial sensors and Applanix SmartCal™ compensation technology
- High performance external IMU
- Advanced Trimble Maxwell™ Custom GNSS survey technology with 2 x 336 tracking channels
- Dual Antenna, GAMS (GNSS Azimuth Measurement System) included
- Primary Antenna:
  - GPS: L1 C/A, L2C, L2E, L5
  - GLONASS: L1 C/A, L2 C/A, L5
  - CODE: BeiDou: B1, B1c, B2, B2A, B3
  - Galileo: E1, E5a, E5b, ESA/IBOC, E6
  - IRNSS: L5
  - QZSS: L1 C/A, L1 SAIF, L2C, L5, LEX
  - SBAS: L1 C/A, L5
  - MSS L-Band: OmnisStar
- Secondary Antenna:
  - GPS: L1 C/A, L2C, L2E, L5
  - GLONASS: L1 C/A, L2 C/A, L5
  - CODE: BeiDou: B1, B1c, B2, B2A, B3
  - Galileo: E1, E5a, E5b, ESA/IBOC, E6
  - IRNSS: L5
  - QZSS: L1 C/A, L1 SAIF, L2C, L5, LEX
  - SBAS: L1 C/A, L5
- High-precision multiple correlator for GNSS pseudorange measurements
- Unfiltered, unsmoothed pseudorange measurements data with low noise, low multipath error, low time domain and high dynamic response
- Very low noise GNSS carrier phase measurements with <1 mm precision in a 1 Hz bandwidth
- Proven Trimble low elevation tracking technology
- Real-time GNSS L1, SBAS positioning mode
- Real-time 100 Hz position, attitude output, dual IMU 200 Hz data rate logging
- Navigation output format: ASCII (NMEA-A083), binary (Trimble GSOF)
- RTK license support for Reference Inputs CMR, CMR+, sCMRx, RTCM 2.1, 2.2, 3.0, 3.1, 3.2, sold separately
- Supported by POSPac MMS (sold separately)
- No export permit required
- Support for optional Distance Measurement Indicator (DMI) input (sold separately)
- Support for optional GNSS Azimuth Measurement System (GAMS™)

#### LAN Input/Output
- All Ethernet functions are supported through dedicated IP address (static or DNS) simultaneously including web-based control GUI access and real-time data streaming
- TCP/IP and UDP
  - ASCII and binary data streaming (time tag, PPS sync, status, position, attitude, velocity, track and speed, dynamics, performance metrics, GNSS data), configuration messages
- HTTP
  - Web-based control software (GUI) for easy system configuration and low rate display. Support for all common browsers (IE, Safari, Mozilla, Google Chrome, Firefox)

#### Serial Input/Output
- RS232 ports (baud rates up to 460,800)
- ASCII and Binary data streaming (time tag, PPS sync, status, position, attitude, velocity, track and speed, dynamics, performance metrics, GNSS data), configuration messages

#### Physical Characteristics
- Size: 100x60x21 mm
- Weight: 100 g
- Power: 7W max, 8-34V DC or 3.3V DC
- Temperature: -40°C to +75°C (Operational)
- GNSS Operating Limit: 515 m/sec, 18,000 m
- External IMU-82
  - Range: +/- 10 g
  - Power: 4.75 to 36 V DC
  - Size (L x W x H): 4W x 61 x 68 x 65 mm
  - Weight: 0.33 kg

#### Additional Accessories
- Evaluation Kit
  - Includes development board, power supply, and short antenna cables (sold separately)
- DMI
  - External wheel-mounted DMI and cable
- Survey-grade GNSS antennas and cables

### Performance Specifications

#### Absolute Accuracy Specifications (1) (RMS)

<table>
<thead>
<tr>
<th></th>
<th>With GNSS</th>
<th>GNSS Outage, 60 seconds or 3km</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>AP+ Land</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>RTK</strong></td>
<td>0.02 H</td>
<td>0.02 H</td>
</tr>
<tr>
<td><strong>Post-Processed</strong></td>
<td>0.03 V</td>
<td>0.03 V</td>
</tr>
<tr>
<td><strong>RTK</strong></td>
<td>0.69 H</td>
<td>0.24 H</td>
</tr>
<tr>
<td><strong>Post-Processed</strong></td>
<td>0.13 V</td>
<td></td>
</tr>
<tr>
<td><strong>Roll &amp; Pitch (deg)</strong></td>
<td>0.01</td>
<td>0.01</td>
</tr>
<tr>
<td><strong>True Heading (deg)</strong></td>
<td>0.05</td>
<td>0.025</td>
</tr>
</tbody>
</table>

### Environmental Characteristics
- Temperature: -40°C to +75°C (Operational)
- GNSS Operating Limit: 515 m/sec, 18,000 m

### Inertial Measurement Units (IMUs)

<table>
<thead>
<tr>
<th>Type</th>
<th>Range</th>
<th>Temp (°C) (Operational)</th>
<th>Power</th>
<th>Size (L x W x H) mm</th>
<th>Weight (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internal Onboard IMU-79</td>
<td>+/- g</td>
<td>-40 to +75</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>External IMU-82</td>
<td>+/-10 g</td>
<td>-40 to +85</td>
<td>4.75 to 36 V DC</td>
<td>4W x 61 x 68 x 65 mm</td>
<td>0.33 kg</td>
</tr>
</tbody>
</table>