TRIMBLE AP+ 20 LAND

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.

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.

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
DATASHEET

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, L3
  - Galileo*1: E1, E1A, E5A, E5B, E5aIIBC, E6
  - IRNSS: L5
  - QZSS: L1 C/A, L1 SAIF, L1I
  - L2C, L5, LEX
  - SBAS: L1 C/A, L5
  - MSS L-Band: Omnis slaughtered Trimble RTX

- Secondary Antenna: GPS: L1 C/A, L2C, L2E, L5
  - GLONASS: L1 C/A, L2 C/A, L3
  - Galileo*1: E1, E1A, E5A, E5B, E5aIIBC, E6
  - IRNSS: L5
  - QZSS: L1 C/A, L1 SAIF, L1C
  - L2C, L5, LEX
  - SBAS: L1 C/A, L5
  - MSS L-Band: Omnis slaughtered Trimble RTX

- 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: ASC1 (NMEA-0183), binary (Trimble GSOF)
- RTK license support for Reference Inputs CMR, CMR+, sCMRxt, 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
USB 2.0 Device Configuration
ASCII and Binary data streaming (time tag, PPS sync, status, position, attitude, velocity, track and speed, dynamics, performance metrics, GNSS data), configuration messages

OTHER INPUT/OUTPUT
PPS (pulse-per-second) Time synchronization
Event Input (2) Two time marks for external events, TTL 3.3V, 50 Hz max rate
Digital I/O (3) LED drivers with dedicated functionalities for system integrators
DMI Input Quadrature pulse with reference voltage
External IMU Interface Dedicated signals for external IMU support

LOGGING
Internal Logging 6 GB flash memory
External Logging USB 2.0 host configuration support for removable USB device
Parameters Time tag, status, position, attitude, velocity, track and speed, dynamics, performance metrics, raw IMU data (200 Hz), raw GNSS data (5 Hz)

PERFORMANCE SPECIFICATIONS

Absolute Accuracy Specifications1,8 (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>Maximum V</td>
<td>0.03 V</td>
<td>0.03 V</td>
</tr>
<tr>
<td><strong>Post-Processed</strong></td>
<td>0.09 H</td>
<td>0.09 H</td>
</tr>
<tr>
<td>Maximum V</td>
<td>0.33 V</td>
<td>0.33 V</td>
</tr>
<tr>
<td><strong>RTK</strong></td>
<td>0.30 H</td>
<td>0.30 H</td>
</tr>
<tr>
<td>Maximum V</td>
<td>0.15 V</td>
<td>0.15 V</td>
</tr>
</tbody>
</table>

PHYSICAL CHARACTERISTICS

Size1,10 ... ... ... ... ... ... ... 100 x 60 x 21 mm
Weight1 ... ... ... ... ... ... ... ... 100 g
Power1 ... ... ... ... ... ... ... ... 7W max, 8-34 DC or 3.3V DC
Connectors ... ... ... ... ... ... ... ... x 2 MMCX receptacle
Antenna Port ... ... ... ... ... ... ... ... Output Voltage: Primary 7.5 VDC
... ... ... ... ... ... ... ... Secondary 5 VDC
... ... ... ... ... ... ... ... Maximum Current: 400 mA
Internal Logging ... ... ... ... ... ... ... Minimum Input Signal Strength:
... ... ... ... ... ... ... ... 32 dB (+35 dB recommended)

ENVIRONMENTAL CHARACTERISTICS

Temperature ... ... ... ... ... ... ... ... -40°C to +75°C (Operational)
... ... ... ... ... ... ... ... -55°C to +85°C (Storage)
GNSS Operating Limit ... ... ... ... ... ... ... ... ... 515 m/sec, 18,000 m
... ... ... ... ... ... ... ... ... 32 dB (+35 dB recommended)

ADDITIONAL ACCESSORIES

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

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</td>
<td>±/ -6 g</td>
<td>-40 to +75</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>IMU-79</td>
<td>±/ -490 dps</td>
<td>±/ -350 dps</td>
<td>±/ -490 dps</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>±/ -40 g</td>
<td>±/ -350 dps</td>
<td>±/ -350 dps</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MIIMU-90</td>
<td>±/ -490 dps</td>
<td>±/ -350 dps</td>
<td>±/ -490 dps</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Specifications subject to change without notice.

1 Typical performance. Actual results are dependent upon satellite configuration, atmospheric conditions and other environmental effects.
2 Using GAMS option and two meter antenna baseline
3 POSPac MMS, Single Base station or SmartBase
4 There is no official GLONASS L1/CDMA or Galileo E6 ICD. The current tracking capability is based on publicly available information. Full receiver compatibility cannot be guaranteed.
5 Developed under a License of the European Union and the European Space Agency.
6 The hardware of this product is designed for Beidou B3 compatibility (trial version) and its firmware will be enhanced to fully support such new signal as soon as officially published ICD becomes available.
7 Does not include external IMU
8 Performance based upon external IMU
9 With DMI, DMI sold separately
10 Sensor bandwidth (~3dB amplitude) ~50Hz

TRIMBLE APPLANIX
85 Leek Crescent
Richmond Hill, Ontario
L4B 3B3, Canada
+1-289-695-6000 Phone
www.applanix.com
airborne@applanix.com

© 2022, Trimble Inc. All rights reserved. Trimble and the Globe & Triangle logo are trademarks of Trimble Inc., registered in the United States and in other countries. Applanix and the Applanix logo are trademarks of Applanix Corporation, registered in the Canadian Patent and Trademark Office and other countries. InFusion and SmartBase are trademarks of Applanix Corporation. All other trademarks are the property of their respective owners. Information subject to change without notice.