

Applanix positioning

ICC has fully integrated the Applanix product line into its MDR system. The POS LV has several levels of accuracy and is used to collect precise inertial/GPS measurements for vehicle position and orientation in a dynamic environment. The POS LV products are designed to improve the quality of the users' data, and to increase the productivity of surveying, positioning and mapping missions.

The POS is fully controlled by the main MDR. The MDR properly links the POS data to any other data being logged and collected in the vehicle (i.e. profile, digital imaging, etc.). The system also provides

accurate position and orientation during GPS outages. The inertial measuring unit coupled with GPS provides complete vehicle trajectory.

If the POS is used in combination with an ICC profiler, accurate roadway crossfall and grade will be logged in addition to degree of curvature.

The POS/LV option is a turn-key position and orientation system designed specifically for vehicle applications that require high dynamic accuracy in position, roll, pitch and true heading through GPS outages. By calibrating its inertial sensor on-line, the POS LV maintains the

dynamic fidelity of the position and orientation solution. It also removes long-term drifts from the inertially-derived position and orientation information. This combination also allows POS LV to limit position and velocity errors, even during poor GPS reception, multi-path conditions and through GPS outages. In addition to measuring vehicle dynamics, POS LV's capabilities can be used to provide real-time or post-processed motion compensation information.



This MDR system utilizes an Applanix POS for Positioning Information. The POS is integrated with the laser profiler for accurate crossslope and grade measurements. The pictured system also includes ICC's Forward, ROW, and Downward Imaging.



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The POS LV uses a proprietary combination of the following technologies to produce extremely accurate measurements.

- **Inertial Measuring Unit (IMU):** self-contained sensor provides precise vehicle orientation data and low-drift vehicle position through GPS outages
- **GPS:** Provides precise positioning
- **GPS Azimuth Measurement System (GAMS):** two GPS antenna solution for high accuracy heading, independent of latitude and dynamics
- **Distance Measurement Indicator (DMI):** Senses distance traveled to provide aiding data when GPS is not available
- **Strapdown Inertial Navigation Software:** Provides precise. High-rate measurements of vehicle dynamics by integrating and processing sensor data using a proprietary tightly-coupled Kalman filtering technology



Precise Positioning under the most difficult GPS conditions



Urban Environments



Tunnels and Bridges



Challenging Environmental Conditions



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