

What is GNSS/INS Integrated Navigation System ?

Inertial navigation systems usually can provide an accurate solution only for a short period of time. The INS accelerometers produce an unknown bias signal that appears as a genuine specific force. This is acceleration integrated twice against time and thus produces an error in position. Additionally, the INS software must use an estimate of the angular position of the accelerometers when conducting this integration. Typically, the angular position is tracked through an integration of the angular rate from the gyro sensors. These also produce unknown biases that affect the integration to get the position of the unit.

GNSS uses signals from orbiting satellites to compute position, time and velocity. GNSS navigation has excellent accuracy provided the antenna has line of sight visibility to at least four satellites. When the line of sight to satellites is blocked by obstructions such as trees or buildings, navigation becomes unreliable or impossible.

when GNSS and INS are combined, the two techniques enhance each other to provide a powerful navigation solution. When the GNSS conditions are good (line of sight to several satellites), the GNSS receiver provides accurate position and time to the navigation system. When the GNSS conditions become poor, the INS provides the position and navigation until the GNSS conditions improve.

SkyMEMS GNSS/INS Integrated Navigation System adopts high precision MEMS inertial components and integrates GPS/BD single frequency dual-mode satellite navigation system. It has built-in magnetic heading measurement system and has the height measurement solution. The system has special SkyMEMS new integrated navigation fusion algorithm, which can realize high sensitivity tracking and accurate positioning in open space, and it also can realize navigation application in the city, forest, canyon terrain, etc.

The system enjoys smaller size, lighter weight, lower cost, and lower power consumption, faster start-up, and higher reliability, better dynamic environment adjustment, etc. It can be applied in tactical weapon, unmanned aircraft fields. It is suitable for the navigation and control of all kinds of moving objects, such as unmanned aerial vehicle (uav), vehicle navigation, the surface craft, ship and so on.

Applications of GNSS/INS Integrated Navigation System

SkyMEMS GNSS/INS Integrated Navigation System is a high performance integrated navigation system, it enjoys high reliability, high stability in dynamic applications, which has been widely used in the following fields:

- Unmanned Aerial Vehicle
- Ship and Boat
- Vehicle Navigation
- Surface Craft
- Civil Plane