

# ANS-511

ASELSAN AIRBORNE INERTIAL  
NAVIGATION SYSTEM

0.8 NM/HR  
PERFORMANCE

DO-178B and DO-254  
CERTIFIABLE





# ANS-511

## ASELSAN AIRBORNE INERTIAL NAVIGATION SYSTEM

ANS-511 is a navigation grade airborne inertial navigation system with embedded SAASM GPS receiver which is intended for application to military air vehicles.

ANS-511 has an open architecture and flexible hardware/software which can be adapted to various air platforms including rotary-wing, fixed-wing and unmanned aerial vehicles.

ANS-511 provides linear acceleration, linear and angular velocity, position, attitude and heading to the host vehicle systems continuously. ANS-511 provides hybrid (inertial + GPS) navigation solution, inertial only navigation solution and GPS only navigation solution simultaneously. ANS-511 is also capable of using external pressure altitude data to complement hybrid and inertial only navigation solutions.

ANS-511 is designed specifically for airborne applications and it is a DO-178B and DO-254 certifiable system.

### System Interfaces

- MIL-STD-704A-F and DO-160G Compliant 28VDC Power Interface
- 2 x MIL-STD-1553B Interfaces, dual redundant
- ARINC 429 Interfaces, 8 output, 4 input
- 3 x RS422 and 1 x RS232 Asynchronous Serial Interfaces
- Have Quick and 1PPS Interface
- KYK-13 Interface
- Active and Passive RF Antenna Interface
- CRPA Type Antenna Interface
- Discrete Interfaces

### System Operational Modes

- Leveling
- Alignment
- In Flight Alignment (IFA)
- Gyro Compass (GC) Alignment
- Stored Heading Alignment
- Directional Gyro / Attitude
- Navigation
- Initiated Built In Test (IBIT)
- Platform Adaptation (ORIENT)

### System Functions

- Hybrid, Free Inertial, GPS Only Navigation Solutions
- Magnetic Variation, Wind Speed and Direction Calculation
- Motion Detection Function
- Zero Velocity Update, Position Update
- Configurable Flight Control Filters
- Alignment Progress Status
- GPS Lever Arm, Reference Point Lever Arm Correction
- Start-Up BIT, Periodic BIT, Commanded BIT

### Navigation Performance

|  | Free Inertial                 | Hybrid (INS+GPS)              |
|--|-------------------------------|-------------------------------|
| <b>Position</b>  |                               |                               |
| <b>Horizontal</b>  | 0.8 nm/hr CEP                 | 10 m (CEP)                    |
| <b>Altitude</b>  | < 45 m <sup>(1)</sup>         | 16 (PE)                       |
| <b>Velocity</b>  |                               |                               |
| <b>North, East</b>   | 0.8 m/s (rms)                 | 0.03 m/s (rms)                |
| <b>Vertical</b>  | 0.6 m/s (rms)                 | 0.03 m/s (rms)                |
| <b>Attitude</b>  |                               |                               |
| <b>Roll, Pitch</b>   | 0.05 deg (rms)                | 0.02 deg (rms)                |
| <b>Azimuth</b>   | 0.07 deg <sup>(2)</sup> (rms) | 0.02 deg <sup>(3)</sup> (rms) |
| 1- With Baro Aiding. %1.5 (rms) for Altitude>3 km.<br>2- With 4 minute ground alignment at 45 degree Latitude.<br>3- With sufficient aircraft maneuvers. |                               |                               |

### Alignment Durations

| Ground Alignment Mode | GPS In-Flight Alignment Mode | Stored Heading Mode |
|-----------------------|------------------------------|---------------------|
| 4.0 min               | 10.0 min                     | 30 sec              |

### Environmental Conditions

- MIL-STD-810G / DO-160G Compliant

### Electromagnetic Conditions

- MIL-STD-461E / DO-160G Compliant

### Dimensions and Weight

- Dimensions: 28 cm (H) x 20 cm (D) x 17 cm (W) (including connector)
- 7.5 kg with GPS receiver installed

