## Dynamically Tuned Inertial Navigation System

### Introduction

Dynamically Tuned Inertial Navigation System consists of an inertial measurement unit, magnetic heading sensor and control the display, satellite receiving antenna, doppler radar and installation bracket component. The satellite receiving antenna can be customized according to the needs for BD2/GPS/GLONASS triple receiving antenna or BD2 anti-interference antenna. Inertial measurement unit can also be a separate form of inertial measurement unit, for all kinds of missile flight control system and guidance system.

Strapdown inertial navigation system determines aircraft position, heading, altitude, acceleration. As the navigation of aircraft, it determines flight control, route management and provides location, velocity, attitude, heading information. Dynamically Tuned Inertial Navigation System has emergency rapid alignment, normal alignment, navigation, correction, parameter calibration, testing, parameter binding and non volatile storage.

### Specifications

| Project | ER-DINS-1[1] | ER-DINS-1A[2] | ER-DINS-1N[3] |
|---|---|---|---|
| Overall Dimensions | 1/2ATR Standard Case<br>315mm×124mm×194mm | 1/2ATR Standard Case<br>315mm×124mm×194mm | 1/2ATR Standard Case<br>315mm×124mm×194mm |
| Weight | ≤12kg | ≤22.33kg<br>(Containing Doppler Radar) | ≤8.5kg |
| Power Supply | 28VDC<br>Power Consumption≤90W | 28VDC<br>Power Consumption≤65W | 28V DC<br>Power Consumption≤60W |
| Preparation Time<br>(Starting At Normal Temperature) | Normal Condition 8min<br>Emergency Situation 2min | Normal Condition 8min<br>Emergency Situation 3min | Normal Condition 6min<br>Emergency Situation 3min |
| Precision Of Integrated Navigation | Position: 30m (CEP)<br>Speed: 1m/s (RMS)<br>Heading: 0.4°(RMS)<br>Attitude: 0.2°(RMS) | Position: 30m (CEP)<br>Speed: 1m/s (RMS)<br>Heading: 0.4°(RMS)<br>Attitude: 0.2°(RMS) | Position: 30m (CEP)<br>Speed: 1m/s (RMS)<br>Heading: 0.4°(RMS)<br>Attitude: 0.2°(RMS) |
| Pure Inertial | Position: 10km/30min (CEP) | Position: 10km/20min (CEP) | Position: 1.5nm/10min (CEP) |
| Navigation Accuracy | Speed: 6m/s (RMS)<br>Heading: 0.4° (RMS)<br>Attitude: 0.2° (RMS) | Speed: 5m/s (RMS)<br>Heading: 0.4°(RMS)<br>Attitude: 0.2°(RMS) | Speed: 6m/s (RMS)<br>Heading: 0.5°(RMS)<br>Attitude: 0.2°(RMS) |

| Project | ER-DINS-1[1] | ER-DINS-1A[2] | ER-DINS-1N[3] |
|---|---|---|---|
| Inertial/Doppler Integrated Navigation Accuracy | – | Position: 1%·S, S For The Flying Distance | Position: 0.8%·S, S For The Flying Distance |
| | | Speed: Not Less Than Doppler Radar Accuracy | Speed: Not less Than Doppler Radar Accuracy |
| | | Heading: 0.4°(1σ) | Heading: 0.5°(1σ) |
| | | Attitude: 0.2°(1σ) | Attitude: 0.2°(1σ) |
| Precision of Satellite Navigation | Position: 30m(CEP) | Position: 30m(CEP) | Position: 30m(CEP) |
| | Speed: 1m/s(RMS) | Speed: 1m/s(RMS) | Speed: 0.8m/s(RMS) |
| Dynamic Adaptability | Angular Velocity≥±100°/S | Angular Velocity≥±100°/S | Angular Velocity≥±100°/S |
| | Linear Acceleration≥±8g | Linear Acceleration≥±8g | Linear Acceleration≥±8g |
| | Angular Acceleration≥200°/S2 | Angular Acceleration≥200°/S2 | Angular Acceleration≥300°/S2 |
| Working Temperature | -40℃~+70℃ | -40℃~+65℃ | -40℃~+60℃ |
| Storage Temperature | -55℃~+70℃ | -55℃~+70℃ | -55℃~+70℃ |
| Vibration | 0.0027g2/HZ | 0.02g2/HZ | 0.02g2/HZ |
| Shock | 15g | 15g | 15g |

Note[1]: contains the control display.

Note[2]: contains doppler radar.

Note[3]: with moving base alignment and DVS current correction function.