

## **ER-MINS-5610 MEMS Inertial/Satellite Integrated Navigation System**

### **Introduction**

This MEMS inertial/satellite integrated navigation system is equipped with MEMS gyroscope and accelerometer and mapping multi-mode multi-frequency GNSS receiver. It can achieve a single antenna dynamic alignment or dual antenna-assisted fast high-precision orientation, and the directional accuracy can reach up to 0.1 deg.

This product is equipped with a new integrated navigation and fusion algorithm engine. Making use of the SFE for GNSS occlusion, multi-path interference to optimize the design, it can be used in cities, canyons and other complex environments to meet the requirements of long time, high precision, high reliability navigation application.

The product can support GNSS/odometer/DVL/barometric altimeter and other sensors external, with excellent scalability. Through the use of multi-sensor data fusion technology, and the combination of the inertial measurement and phase, it can make the system have geographical adaptability and robustness greatly improved. The product can meet the application requirements of marine surveying and mapping and map surveying, matching the original data storage, the level of surveying and mapping, and the post-processing software for surveying and mapping navigation. Users can match according to their needs.

### **Features**

Serial port reads IMU and GNSS data

Combined navigation function, real-time calculation of the carrier's location, speed, heading and attitude and other information

Support GNSS real-time RTK function, able to store post-processing data

Provide standardized user general agreement to support the user according to their own needs

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Two RS232 and RS422 serial interfaces are available to enhance the standardization and versatility of product features

## Specifications

<b>System real-time accuracy</b>	
Heading	0.1° (dual antenna mode, baseline length $\geq 2\text{m}$ )
	0.5° (single antenna mode)
Attitude	0.5° ( $1\sigma$ )
Position	single point positioning $\leq 2\text{m}$ (CEP) RTK 50px+1ppm (CEP)
Speed accuracy	0.1m/s
Data update rate	200Hz (configurable)
Start time	$\leq 10\text{s}$
Alignment time	1~2min (depending on the form of dynamic maneuver)
	dual antenna assisted directional time $\leq 1\text{min}$
<b>Reprocessing accuracy</b>	
Heading	0.25° ( $1\sigma$ )
Attitude	0.15° ( $1\sigma$ )
Position accuracy	lockout time: 0s accuracy: 0.02m
Position accuracy	lockout time: 10s accuracy: 0.2m
Position accuracy	lockout time: 60s accuracy: 10m
<b>Key components parameters</b>	
Gyroscope	range: $\pm 450^\circ/\text{s}$ zero partial stability: $\leq 20^\circ/\text{h}$
Accelerometer	range: $\pm 5\text{g}$ zero partial stability: $\leq 1\text{mg}$
<b>User model</b>	
Car model (the default model)	airborne model、ship model
<b>Data interface</b>	
Interface mode	1 path RS232; 1 path RS422; 1 path differential signal.
	2 path single-ended; support PPS; EVENTMARK input/output.
Baud rate	9600-115200 bps (configurable)
<b>Physical characteristics</b>	
Supply voltage	24VDC rated (10~32VDC), power consumption $< 7\text{W}$
Operating temperature	$-40^\circ\text{C} \sim +80^\circ\text{C}$
Waterproof level	IP65
Physical size	102mm $\times$ 56mm $\times$ 38mm
Weight	$< 250\text{g}$

## Applications

Space fields	UAV	High dynamic measurement range
	Aerial surveying	Small dimension, light weight
	Aircraft black box	Supports real-time RTK mobile stations
		Hold IE data post-processing
	INS/GNSS combination design	
Land-based domain	Street view cart	Dual antenna assisted rapid orientation 0.1°
	Electric inspection	Multiple interface outputs
	Unmanned car	Support NMEA standard protocol
		IP67 degree of protection