

# INS912-2A

## High-precision FOG INS



INS912-2A is a cost-effective high-precision FOG INS. It is composed of a hundredth grade fiber optic gyroscope, a quartz accelerometer, a three-axis magnetic sensor, a barometer, and a high-precision multi-mode GNSS satellite guide receiving board. The adaptable integrated navigation algorithm realizes the optimal fusion of inertial navigation heading, GNSS heading, and odometer information, and can still output reliable attitude, heading, position, speed and other information when working without GNSS.

### ADVANTAGES

- High cost performance, low power consumption, small size, and light weight
- mass-producible tactical-grade inertial sensors are used;
- it can be customized according to user scenarios;
- a variety of external sensors can be connected;
- More than 1,000 hours of continuous non-stop operation

### APPLICATION FIELDS

- Tactical missile guidance, antenna stabilization system
- attitude/orientation reference system
- Railway track inspection instrument, unmanned driving
- Navigation and Control of Underwater Robots
- Intelligent navigation and control of mine roadheader and coal excavator

### INS912-2A TECHNICAL PARAMETERS

GNSS technical parameters					
RTK Positioning Accuracy	Flat Surface	RMS	$\leq 1.0\text{cm} + 1\text{ppm}(1\sigma)$		
	At height		$\leq 1.5\text{cm} + 1\text{ppm}(1\sigma)$		
GNSS Supported	BDS: B1/B2; GPS: GPL1/L2; GLONASS: 1/L2; GALILEO: E1/E5b				
Performance					
IMU	Parameter		X	Y	Z
	Gyros	Type	FOG	FOG	FOG
		Range	$\pm 400^\circ/\text{s}$	$\pm 400^\circ/\text{s}$	$\pm 400^\circ/\text{s}$
		Bias stability ( $1\sigma$ )	$\leq 0.05^\circ/\text{h}$	$\leq 0.05^\circ/\text{h}$	$\leq 0.05^\circ/\text{h}$
		Angular random walk	$\leq 0.01^\circ/\sqrt{\text{h}}$	$\leq 0.01^\circ/\sqrt{\text{h}}$	$\leq 0.01^\circ/\sqrt{\text{h}}$
		Scale Factor Nonlinearity	$\leq 50\text{ppm}$	$\leq 50\text{ppm}$	$\leq 50\text{ppm}$
	Accelerometer	Type	quartz	quartz	quartz
		Range	$\pm 16\text{g}$	$\pm 16\text{g}$	$\pm 16\text{g}$
		Bias stability ( $1\sigma$ )	$\leq 30\mu\text{g}$	$\leq 30\mu\text{g}$	$\leq 30\mu\text{g}$
		Angular random walk	$\leq 10\text{mm}/\text{s}/\sqrt{\text{h}}$	$\leq 10\text{mm}/\text{s}/\sqrt{\text{h}}$	$\leq 10\text{mm}/\text{s}/\sqrt{\text{h}}$
Scale Factor Nonlinearity		$\leq 50\text{ppm}$	$\leq 50\text{ppm}$	$\leq 50\text{ppm}$	
Heading Accuracy	Real time	$0.07^\circ$	Attitude Accuracy	Real time	$0.02^\circ$
	Post-processing	$0.02^\circ$		Post processing	$0.007^\circ$
	Self-seeking accuracy	$0.1^\circ \times \text{Sec}(\text{Lati})$ 15min(two-position alignment)			
Integrated Navigation System Performance					
Loss of lock time	Horizontal position CEP (50%)	Horizontal speed (m/s) RMS	Attitude ( $^\circ$ )RMS	Heading( $^\circ$ )RMS	
600s	0.40nm	1.20	0.05	0.05	
1800s	1.6nm	2.40	0.05	0.05	
3600s	3.2nm	3.50	0.05	0.05	
Physical parameters					
size	130x136x130 (mm)				
weight	$\leq 5\text{kg}$				
Operating temp	$-40^\circ\text{C} \sim 85^\circ\text{C}$				