M4000

FOG based high-performance maritime survey-grade inertial navigation system

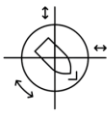
M4000 is manufactured by fiber optic gyroscope and quartz additive, utilizing north finding technology, inertial navigation technology, and integrated navigation technology. It can output various information such as posture, heave, heading, position, and speed for users. Its high-precision inertial measurement unit is based on Micro Magic Technology ® The fiber optic gyroscope (FOG) technology is combined with an embedded digital signal processor running an advanced Kalman filter.

FEATURES AND BENEFITS

- Real time output of high precision attitude, heave, and heading information
- Compact, light and reliable
- FOG unique strap-down technology
- Multiple aiding available: DVL and GNSS sensor
- Ethernet, RS422, RS232 interface
- No ITAR component inside
- IMU option for high accuracy platform stabilization
- Low latency
- Static and dynamic alignment modes, with and without GNSS
- 32Gb embedded data logger
- Versatile I/O options for an easy integration
- High reliability and maintenance free
- 24/7 worldwide technical assistance

APPLICATIONS

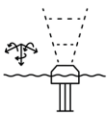
Ships monitoring and Navigation
Prevent Cargo damage and Container loss. Add accurate ship motion measurements for safe and optimal vessel operations.



Dynamic positioning
Motion compensation of GNSS antenna and other position reference systems. Easy MRU retrofit and no recalibration.

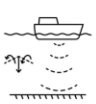
Active Heave compensation
Heave compensation of cranes, LARS and winches requires accurate heave measurements in Real sea conditions.

Gangway
3D motion compensated gangways require accurate 6DoF motion measurements at all times in Real sea conditions.



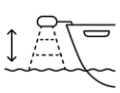
Buoys
High quality wind data requires accurate heave, roll and pitch measurements in Real sea conditions.

Helideck monitoring
Accurate Heave velocity and roll and pitch measurements in Real sea conditions.
No recalibration and flawless operation in any temperature.

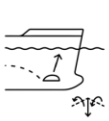


Hydrography
Accurate motion compensation of Sonars, eco-sounders, etc ensuring high-quality seafloor maps.

Offshore fish farms
Condition monitoring of Offshore fish farms. Reduce risk with Accurate motion measurements.



Wave radar
Accurate heave measurements to compensate downward looking wave radars. Compact and no recalibration required.



Stabilizing fins
Roll damping systems and Stabilizing fins need accurate and affordable roll measurements in Real sea conditions.

Offshore oil drilling platform
Monitoring the stable state of offshore oil drilling platforms through precise motion monitoring compensation

sales@memsmag.com / www.memsmag.com / Whatsapp: +8618151836753
LinkedIn: www.linkedin.com/company/micro-magic-inc

Micro-Magic
Attitude and Positioning Be Everywhere!

TECHNICAL SPECIFICATIONS

System Accuracy	Product code	M4000-A	M4000-B	M4000-C
	Category	FOG-INS	FOG-INS	FOG-INS
	Heading accuracy (RMS, 1σ)(1)	≤0.2°secϕ (Pure inertial 1h) ≤0.1°secϕ (INS+GNSS)	≤0.3°secϕ (Pure inertial 1h) ≤0.2°secϕ (INS+GNSS)	≤0.4°secϕ (Pure inertial 1h) ≤0.2°secϕ (INS+GNSS)
	Attitude accuracy (RMS, 1σ)	≤0.01°	≤0.02°	
	Heave (RMS)	≤5cm or 5% Take the bigger value of H (H refer to Heave)		
	Angular velocity range	≤300°/s	≤500°/s	
Positioning Accuracy	GNSS Assistance (RMS)	≤0.3%±3m	≤0.3%±5m	
	DVL Assistance	0.6%D	0.8%D	
	Pure inertial	2nm/h	3nm/h	3nm/h
Interface	Output	2xRS232/2xRS422/Ethernet/PPS		
	Input	GNSS/DVL		
	Data frequency	0 ~ 200Hz (Configurable)		
	Protocol	NMEA0183/RS422/RS232/Customized		
Physical Characteristics	Size	≤180 x 160 x 205（mm）		
	Weight	≤10Kg		
	Voltage	12 ~ 36VDC		
	Power	≤20W		
Timing	Starting time	≤5min		
Environment	Operation temp	-40℃ ~ 60℃		
	Storage temp	-40℃ ~ 70℃		

(1) Whichever is greater for wave periods up to 30 seconds. Smart Heave is delayed by 100 s fixed value. Real-time heave accuracy is 5 cm or 5% whichever is greater for period up to 25s.

All specifications subject to change without notice

sales@memsmag.com / www.memsmag.com / Whatsapp: +8618151836753
LinkedIn: www.linkedin.com/company/micro-magic-inc

Micro-Magic
Attitude and Positioning Be Everywhere!