MGS1000

High Performance Single Axis Gyro

Main Features

- Cost Effective Z Axis MEMS Gyro with Temp. Output

- Heading: Diverging 0.1°/hour

- Range: Gyro ±300°/s, (ODM Supported)

- Fully Calibrated and Error Compensation

- Wide Input Power Range: 5~18VDC

- Compact and Light Weight - 50*45*21mm, 70grams

- High Survivability in Harsh Environment, IP67

- Wide Working Temperature: -40°C~+85°C

MGS1000 Single Axis MEMS Gyro is Z axis MEMS gyro system, which provides accurate heading direction and temperature, MGS1000 is a miniature factory-calibrated module to provide consistent performance through the extreme operating environments.

MGS1000 offers a highly-effective solution for cost-sensitive demanding applications. It adopts advanced MEMS components, which reduces the cost deeply. The system enjoys small size and light weight, it is widely applied in AGV, Robotics Control, Platform Stabilization, etc.

- ✓ **12-Step Quality Control, Super Reliability, More Functions**
- ✓ **Adopting Original Big Brand Component, High-class Material, Competitive Price**

- ✓ **Real Actual Precise after Calibration, Perfect Performance**
- ✓ **Successful Applications in Tens of Fields, More than 1000 Customers are Using**

Typical Applications
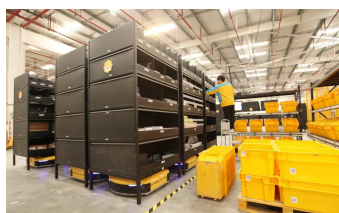
AGV	Robot	Industries	Platform Stability

Super Reliability & Performance

MEMS Acc	MEMS Gyro	IMU	Vertical Gyro	AHRS
INS	GNSS/INS	E-compass	Inclinometer	FOG

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Technical Specifications

Technical Specs		
Parameter	**Value**	**Comments**
Heading		
Range	±180°	
Accuracy	0.1°/hour	it is diverging with time, diverging speed is 0.1°/hour
Gyro		
Range: Heading	±300°/s ±75°/s, ±150°/s, ±900°/s	default setting optional
Noise	< 0.3°/s(RMS)	
Zero Error (25°C)	< 0.2°/s	
Bias Instability	24°/h (75°/s range) 40°/h (900°/s range)	typical value, Allen Variance
Bias Temperature Error	±3°/s	
Zero Drift Repeatability	0.14°/s(RMS)	
Scale Factor Non-linearity	0.2%	
Bias Acceleration Sensitivity	0.077°/s/g (typical) 0.17°/s/g (max)	
Rate Noise Density	0.025°/s/sqrHz	
Angle Random Walk Coefficient	0.28°/h	Allen Variance
Bias Vibration Sensitivity	0.001°/s/g2rms (typical) 0.003°/s/g2rms (max)	12g (RMS), 10Hz ~5kHz, random
Bandwidth	5~160Hz	

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Technical Specifications

Technical Specs		
Parameter	**Value**	**Comments**
Environment Condition		
Working Temperature	-40~+85°C	
Protection Level	IP67	
Electromagnetic compatibility	Compatible with EN61000 and GBT17626	
MTBF	≥5000hours	
Vibration Resistance	10grms, 10~1000Hz	
Shock Resistance	100g@11ms, 3 axes, (half sine wave)	
Power Supply		
Input Voltage	5~18VDC	
Current	60mA@9VDC	
Communication Protocol		
Default Interface	RS232	
Baud rate	115200	
Data Update Rate	100Hz	
Physical Parameter		
Dimension	50mm*45mm*21mm	
Weight	around 70 grams	
Connector	5 pin mini aviation connector	
Location Hole	4 holes	

Super Reliability & Performance

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Pins Definition

Pins Definition			
Pins No.	5 pin mini aviation connector Line Color	Name	Description
1	Brown	Vcc	power positive pole
2	Black	GND	power gound
3	White	RS232_TX	RS232 data transmitting
4	Blue	RS232_RX	RS232 data receiving
5	Gray	RS232_GND	RS232 signal ground (short circuit with power ground inside the sensor)

Dimension & Package
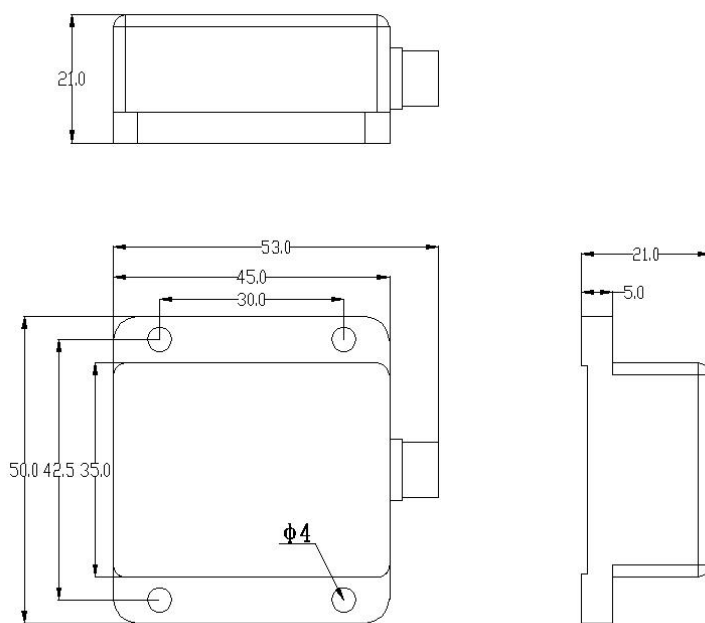
(Unit: mm)

MGS1000 three-view drawing

MGS1000

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Communication Protocol

the electronic parameters of RS232 communicaiton protocol are as follows:

- ➢ Baud rate: 115200
- ➢ Data bit: 8
- ➢ Stop bit: 1
- ➢ Check bit: none

the data string is sent out every 10ms, and each data string includes 58 bytes, the detailed description see as follows:

Data String Definition		
Name	Byte Length	Description
Initial Code	4	0x4E 0x4A 0x35 0x92
X axis of acceleromter	4	0
Y axis of acceleromter	4	0
Z axis of acceleromter	4	0
X axis of gyro	4	0
Y axis of gyro	4	0
Z axis of gyro	4	float mode floating number, 4 bytes, high byte in front, unit:deg/s
X axis of magnetic sensor	4	0
Y axis of magnetic sensor	4	0
Z axis of magnetic sensor	4	0
Temperature	4	float mode floating number, 4 bytes, high byte in front, unit: °C
Heading Angle (divergence)	4	float mode floating number, 4 bytes, high byte in front, unit:deg
Roll Angle	4	0
Pitch Angle	4	0
Sum Check	2	high byte in front, low byte in behind, the sum of all the front data

Remarks: during turning on the sensor, please keep the sensor in static status, and after turning on the sensor, please keep the sensor in statis status more than 5 seconds

Super Reliability & Performance

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Order Information

MGS1000	XXX

MGS1000: model name

XXX: Gyro Measurement Range:
300 = ±300°/sec (Default)
075 = ±75°/sec
150 = ±150°/sec
900 = ±900°/sec

For example, MGS1000-900 means that the MGS1000 with 1 axis gyro range: ±900°/sec