MEMS 3 axis Gyro Sensor

DIGITAL ADVANCED SENSORS DAS

MSENS-GY CE FC

Standard MEMS sensor series MSENS is represenative sensor series of DAS that applied Extended Kalman Filter and provides high performance and reliability.

MSENS can be applied for wide applications such as heavy industries, warehouse and factory automation, robot industries, medical and other various industry areas.

- *High performance MEMS based gyro sensor (gyroscope)*
- *Micro-Processor mounted for stable sensing and data processing*
- *Extended Kalman Filter, noise filtering and temperature compensation*
- *Customized specifications for applying various industry areas*

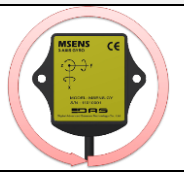
General Specifications

Item	Specification
Measuring Axis	3 axis
Measuring Range	-180 ... +180 deg
Resolution	0.1deg, 0.01deg/s
Non-Linearity	0.25% FS
Response	100 Hz
In-Run Bias Stability	＜12˚/h
Angular Random Walk	＜3˚/√h
Output	RS485[1)]
Power Source	10 ... 30Vdc
Current Consumption	＜60mA @12Vdc
Operating Temp.	-20 ... +85 celsius
Waterproof	IP65
Dimensions[2)]	W42 x D57 x H20mm
Weight	68g
Cables	Shielded 4C, 50cm

1) Self-designed-protocol

2) Without Mounting

Sensing Direction

X axis	Y axis	Z axis
		

Wiring Connections

MSENS series is wired by MG610331-5 plug (Korea Electric Terminal Co., Ltd.). The plug can be deleted when placed order.

	Color	RS485
MSENS-GY	RED	V+
	BLACK	GND
	GREEN	A (T+)
	WHITE	B (T-)

RS485 Protocol

1) Communication Standards

Baudrate	115,200	Data Bits	8
Stop Bits	1	Parity	None

2) Data Format (ASCII. various ciphers)

= [ID_mode+scale_X_Y_Z]+Checksum+CR

- ✓ *_ means space, + means non-space.*
- ✓ *Every echos (return messages) received in a pair of square bracket [ ].*

***e.g.* [1 01 900 50 1700]12**

- ✓ *Check Sum : Substitute ASCII of each bytes for HEX and calculate by XOR.*

3) Commands

Carriage Return and Line Feed must be attached to end of commands.
Every commands must be upper cases.

***e.g.* <1 START>53+CR+LF**

<@>	Measure data once.
<@ START>	Measure continuously.
<@ STOP>	Stop measuring.
<@ ID #>	[3] Set ID from @ to #
<@ SPEED #>	[4] Baudrate setting
<@ MODE #>	[5] Data mode setting
<@ SCALE #>	[6] Scale (dps) setting
<@ INTERVAL #>	[7] Data out-rate setting
<@ CALI>	[8] Bias calibration
<@ INIT>	[9] YAW deg zero-set
<@ SAVE>	[10] Save configurations
<@ RESTORE>	Factory reset

✓ *@ : Sensor ID, # : S/V*

[3] *Default ID is 1. To parallel connect multiple sensors, set every sensor IDs before connect. ID can be set within 1...254.*

[4] *Default Baudrate is 115,200bps. Baudrate can be set by S/V as following table. If send command without S/V, current value will returned.*

1	115,200
2	57,600
3	38,400

[5] *Choose angle data or angular velocity data. Default value is 0. If send command without S/V, current value will returned.*

0	Angle (deg x10)
1	Angular Velocity (mdps)

[6] *Default scale is +/-250 dps. If send command without S/V, current value will returned.*

1	+/-250
2	+/-500
3	+/-2,000

[7] *Default out-rate is 100ms. Out-rate can be set within 10...1,000ms by 10ms of unit. In Angular Velocity mode, out-rate is fixed by 10ms. If send command without S/V, current value will returned.*

[8] *Calibrate bias of the sensor. This may affect critically to sensor accuracy. Calibrate only if absolutely necessary and keep sensor stably during calibrating.*

[9] *Set YAW (Z) axis current position to zero. Gyro sensor YAW axis occurs zero-position-drift continuously because it keeps calculating integral calculus for its zero position. This is a characteristic of MEMS gyro sensor.*

[10] *Save ID and configurations. ID and any configurations will be initialized when shut power off without save.*

Ordering Code

Format : MSENS-GY-485

Options

1) Receptacle P/N : MG64REC
2) Cable length : additional cost per meter
3) The plug can be deleted when placed order.

NOTES

1) *Ground connection is recommended in noise occurred environment.*
2) *RS485 protocol may cause delay or crash by internal processing time and other reasons. If commanding is not in real-time, repeat sending the command.*
3) *Check wiring connections before use.*
4) *12 months warranty is provided after released. Warranty provided only in case of using for designed purpose correctly.*
5) *Specifications, design and components can be changed without prior notice to improve its performances.*

DAS Co., Ltd.
128 Bibong-ro, Bibong-myeon,
Hwaseong-si, Gyeonggi-do, 18284
Republic of Korea
TEL : +82 31) 356-3541
email : das@das-co.com
Web : http://das-co.com