


GYROSTAR®
Murata
Piezoelectric Vibrating Gyroscope ENV Series

High-precision angular velocity sensor utilizing Murata's unique triangular prism vibrating unit.

This angular velocity sensor employs the principle that the Coriolis force results if an angular velocity is applied to a vibrating object. Murata's unique triangular prism vibrating unit is employed in the sensor element unit, thereby enabling piezoelectric ceramics for both excitation and detection to be used together. The employment of this unit simplifies equipment structure and circuit configuration, thus making it possible to maintain outstanding performance characteristics. This sensor can be used for positional control and posture control of a moving object requiring high-precision measurements.

FEATURES

1. Compact and lightweight.
2. High precision with high S/N ratio.
3. High sensitivity and good linearity.

APPLICATIONS

1. Direction detection in vehicle navigation systems.
2. Controlling the direction of antenna facing satellite for moving objects.
3. Detecting the movement of other objects for which high precision is required.

DESCRIPTION

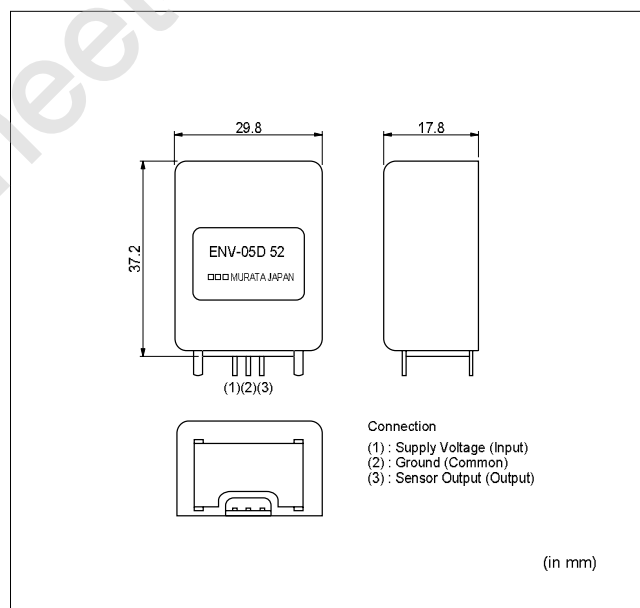
ENV-05D-52

RATINGS

Supply voltage	+5	VDC
Current consumption	17	mA max.
Maximum angular velocity (Detection range)	± 80 at 25°C Output=2.5V angular velocity=0	%S
Output (at angular velocity=0)	2.5±0.3	VDC
Scale factor (Sensitivity)	22.2±1.8 (at temperature range -10 to +60°C) 22.2±2.9 (at temperature range -30 to +80°C)	mV/ %S
Resolution (DEG/SEC)	0.1	%S
Linearity	±0.5	%FS
Offset drift	9	%S max.
Bandwidth (Response)	7	Hz
Noise level	20	mVrms. max.
Operating temperature range	-30 to +80	°C
Storage temperature range	-40 to +85	°C
Weight (g max.)	50	g max.



EXTERNAL DIMENSIONS



TERMINAL DESCRIPTIONS

Terminals	Descriptions
1	+Supply 【input】
2	Ground (GND) 【common】
3	Sensor output 【output】



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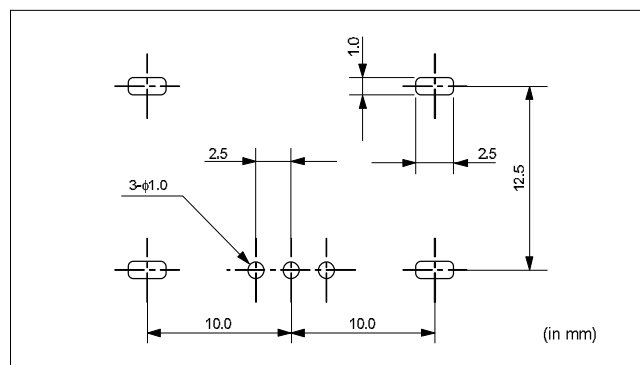


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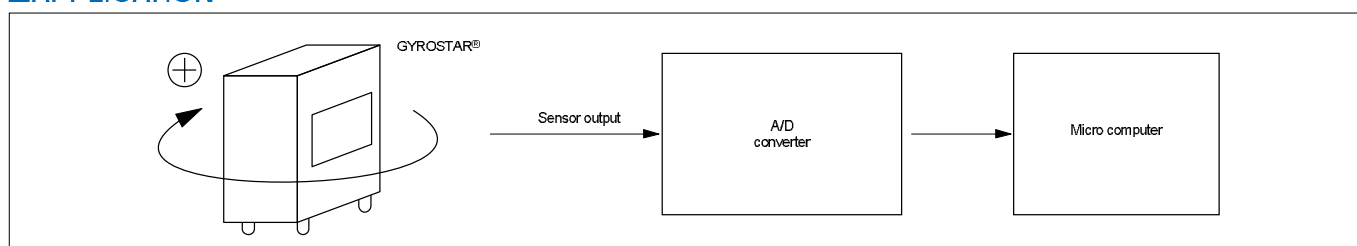
■INSTALLATION

1. When installing the sensor, solder four tabs and terminals on PCB ($t=1.6\text{mm}$). Observe the following rules. If not, characteristics might vary due to soldering heat. Tabs can be bent only once.
2. Install the sensor vertically with respect to the rotating surface. ($90\pm5^\circ$)
3. Install the sensor in a location free from vibration.
4. Install the sensor in a place with no substantial variations in temperature.

Soldering iron	Flow soldering
Terminal: $350\pm5^\circ\text{C}$, 5s or less.	Soldering : $250\pm5^\circ\text{C}$, 5s or less.
Tab : $350\pm5^\circ\text{C}$, 10s or less.	Preheating : $105\pm10^\circ\text{C}$, 2min. or less.



■APPLICATION



1. When high-precision measurement is required, as in a navigation system, use the output of this sensor through an A/D converter as shown above.
2. Positive voltage (+) and negative voltage (−) are obtained in the clockwise and counterclockwise directions, respectively, with the static output as a reference.
3. An A/D converter of 12 bits or more is recommended. Please choose a proper resolution according to the application.
4. The sampling frequency is recommended to be 50 time/sec minimum. Please choose a proper sampling frequency according to the application.
5. Use a sensor output load resistance of $22\text{k}\Omega$ or more.

■NOTICE

1. Incorrect handling may affect sensor characteristics. Please note the following precautions;
 - (1) Do not subject the sensor to shock that exceeds the rated limit.
 - (2) Do not subject the sensor to a magnetic field exceeding 50 gauss.
 - (3) Do not install the sensor in a location in which condensation is likely to form on it.
 - (4) Do not wash the sensor.
2. Precision electronic parts, such as ICs and regulators, are used for the sensor; therefore, it is necessary to take anti-static measures when handling.



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Note:

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 - ③ Undersea equipment
 - ④ Medical equipment
 - ⑤ Transportation equipment (automobiles, trains, ships, etc.)
 - ⑥ Traffic signal equipment
 - ⑦ Disaster prevention / crime prevention equipment
 - ⑧ Data-processing equipment
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