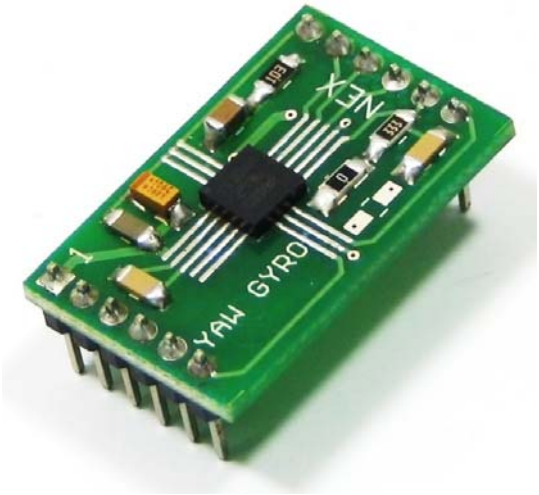
LY510AH ±100 °/ Second, ±400 °/ Second Analog Yaw-Rate Gyroscope Module



Introduction:

LY510AH is a single axis Yaw rate gyroscope module which gives maximum sensing range of ±100 degrees per second and ±400 degrees per second. It gives normal and 4 times amplified Yaw rate output. Board has all the necessary components required for the chip. Board made up of high quality silver plated double sided PCB for giving extra strength to the connectors. Possible applications of this board includes inertial navigation, GPS navigation, motion tracking, industrial and robotics, pointing devices, remote and game controllers, motion control with user interface etc.

Features

- Analog Absolute angular-rate output at ±100 °/ sec and ±400 °/ sec
- Two separates outputs(1X and 4X amplified)
- Internally buffered to ensure low output impedance on output signals.
- Embedded Self-Test, which allows testing electrical and mechanical parts of the sensor
- High stability over temperature
- High shock and vibration survivability
- High quality silver plated double sided PCB for giving extra strength to the connectors

Specification

- Supply voltage (Vdd): 2.7V to 3.6V, 5mA
- Sensitivity on the yaw-rate output pin 4xOUTZ (4 times amplified output): 10 mV/ degrees/ sec (±100 degree / sec)
- Sensitivity on the yaw-rate output pin OUTZ: 2.5 mV/ degree /sec (±400 degree / sec)
- Steady state position output: OUTZ : 1.23V (±10%)
  4xOUTZ : 1.23V (±10%)
- Bandwidth: 140Hz.
- Self-Test checking for checking chip functionality
- Power-down option

Connections:

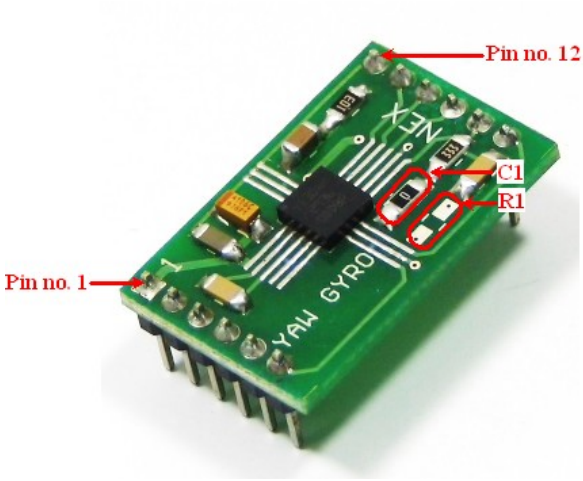


Figure 1: Pin Configuration

Pin#	Pin name	Analog function
1	GND	Supply Ground
2	NC	Not connected
3	NC	Not connected
4	Vref	Vref output from the IC. (Leave unconnected)
5	NC	Not connected
6	NC	Not connected
7	4xOUTZ	Yaw-rate or Z-rate output voltage 4 times amplified (±100 °/ sec)
8	OUTZ	Yaw-rate or Z-rate output voltage (±400 °/ sec)
9	ST	Self-test (logic 0: normal mode; logic 1: self-test)
10	PD	Power-down(logic 0: normal mode; logic 1: Power-down mode)
11	HP	High pass filter reset(logic 0: normal mode; logic 1: external high pass filter is reset)
12	Vdd	3.3V supply voltage

Note: Do not keep PD, ST and HP pins floating. Give them Logic 1 or Logic 0 as per the requirement.

Pin Description:

GND– Connect to supply ground

4xOUTZ – 4 times amplified yaw-rate output, gives 10 mV/ degrees/ sec sensitivity and ±100 degrees/ sec sensing range.

OUTZ – Yaw-rate output, gives 2.5 mV/ degrees/ sec sensitivity and ±400 degrees/ sec sensing range.

ST (Self-test): This is control input pin. Apply logic 0 for normal mode and logic 1 for self-test operation. Self test is used for checking functionality of the IC.

PD (Power Down): This is control input pin. Apply logic 0 for normal mode of operation where IC consumes approximately 5mA current and logic 1 for Power-down mode where system consumes only 5µA current.

HP (High Pass filter reset): This is control input pin. Apply logic 0 for normal mode and logic 1 reset the external high pass filter that ensures the faster response.

Vdd (Supply Voltage): Give 2.7V to 3.3V supply to this pin.

Circuit Diagram:

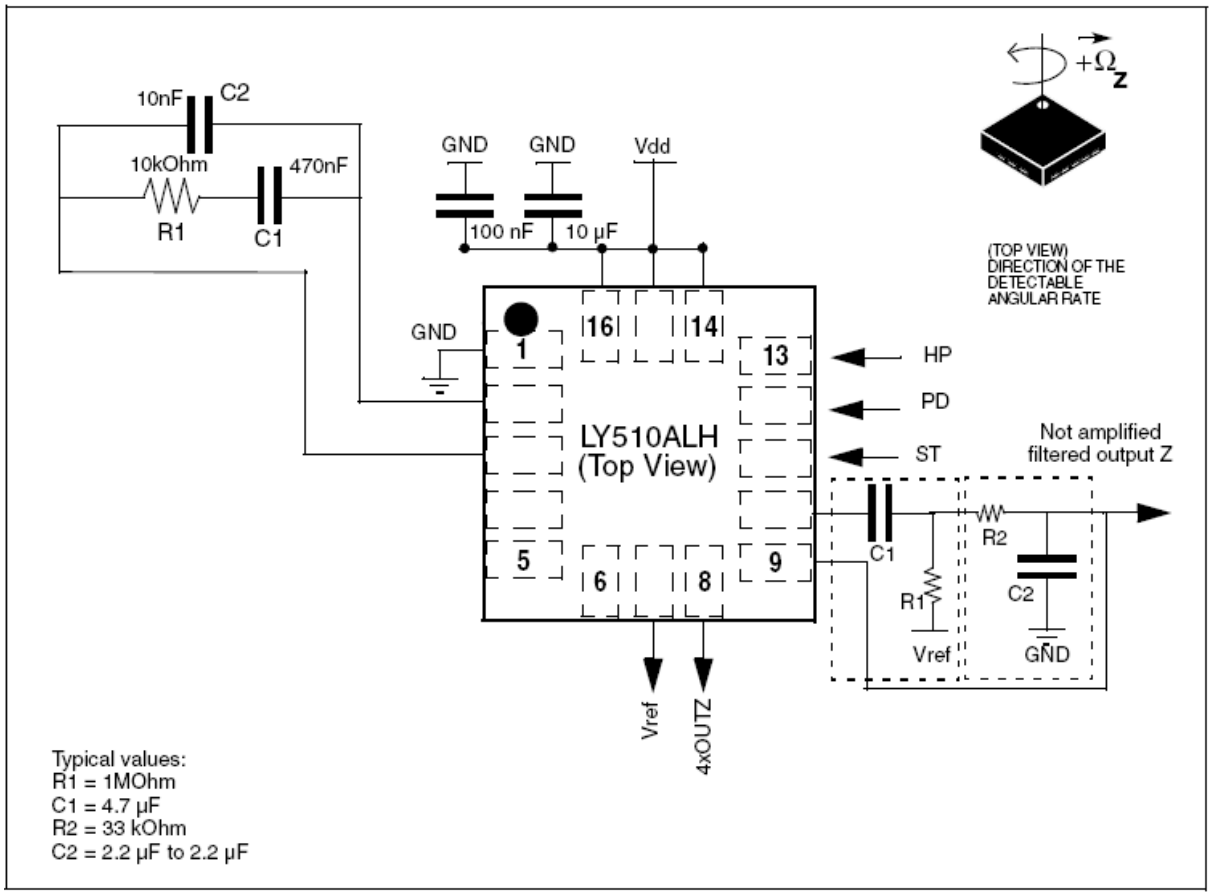


Figure 2: LY510AH electrical connection and external components values

0.1uF and 10uF power supply decoupling capacitors placed near the supply pins. The board allows band limiting of the output rate response through the use of an external low pass and high pass filter. It is always recommended to have low pass filter. On the board low pass filter consisting of R2 and C2 is present. High pass filter is generally not required but if it is required for some specific application, empty pads for R1 and C1 are provided. In the default condition C1 is replaced by 0 ohm resistance. Use R1206 package SMD components for the high pass filter. Refer to Figure 1 for location of the R1 and C1.

Note:
For more information on the LY510ALH (Analog Y-Rate Gyroscope) download the LY510ALH datasheet from the LY510AH ±100 degree/ second Analog Yaw-Rate Gyroscope Module product page from NEX Robotics' website.

Notice

The contents of this manual are subject to change without notice. All efforts have been made to ensure the accuracy of contents in this manual. However, should any errors be detected, NEX Robotics welcomes your corrections. You can send us your queries / suggestions at
info@nex-robotics.com

⚠ **Product's electronics is static sensitive. Use the product in static free environment.**
⚠ **Read the user manuals completely before start using this product**

Recycling:

Almost all the part of this product are recyclable. Please send this product to the recycling plant after its operational life. By recycling we can contribute to cleaner and healthier environment for the future generations.