Triaxial Angular Rate Sensor

ARS-E322/222

Description:

The sensor is a solid-state, triaxial rate gyro configured from three single axis, matched gyros, driven by a microprocessor which provides bias removal and scale-factor compensation using rule-based logic, plus a Built-In-Test-Equipment (BITE) function. This device is manufactured for military applications through extended testing, EMI/RFI filter enhancements and tightly controlled weight. The power conditioning necessary to allow operation from a 24 volt DC supply is implemented within the sensor enclosure. The microprocessor system supports serial data communication via an RS-232 bus. This allows the sensor to be adjusted using a PC running data communications software. The sensor provides complementary analog signals as the primary outputs. These outputs are also available as serial data on the RS-232 bus. The individual gyros are physically set along their axes and are then aligned to <0.2° accuracy using built-in software.

Integrating the rate over time and subtracting the resulting average value from the original provides a bias-free rate signal. The integrator time-constant is held in non-volatile memory and is adjustable using commands sent via the RS-232 serial bus. At switch-on, the integrator is held at zero for a preset time to allow the gyro to stabilize. After this interval, temperature compensation values are added to each gyro, and the integrator will accumulate the signal from the gyro unless the 'hold' command is set. This will freeze the action of the integrator. The sensor is intended for operation on a balanced gimbal and its mass is carefully controlled by adding ballast to ensure interchangeability without the need to re-balance the entire gimbal assembly.

Applications:

These sensors are used for instrumentation and control systems, and are ideally suited for the stabilization of satellite tracking antenna platforms.

- Designed for Satellite Tracking Applications
- Solid State, Strap Down System
- High/Low Sensitivity Adjustment
- Low Cost, Low Power
- Rugged, High Reliability
- Analog and RS-232 Serial Outputs
- Two Year Limited Warranty
- Engineering Support

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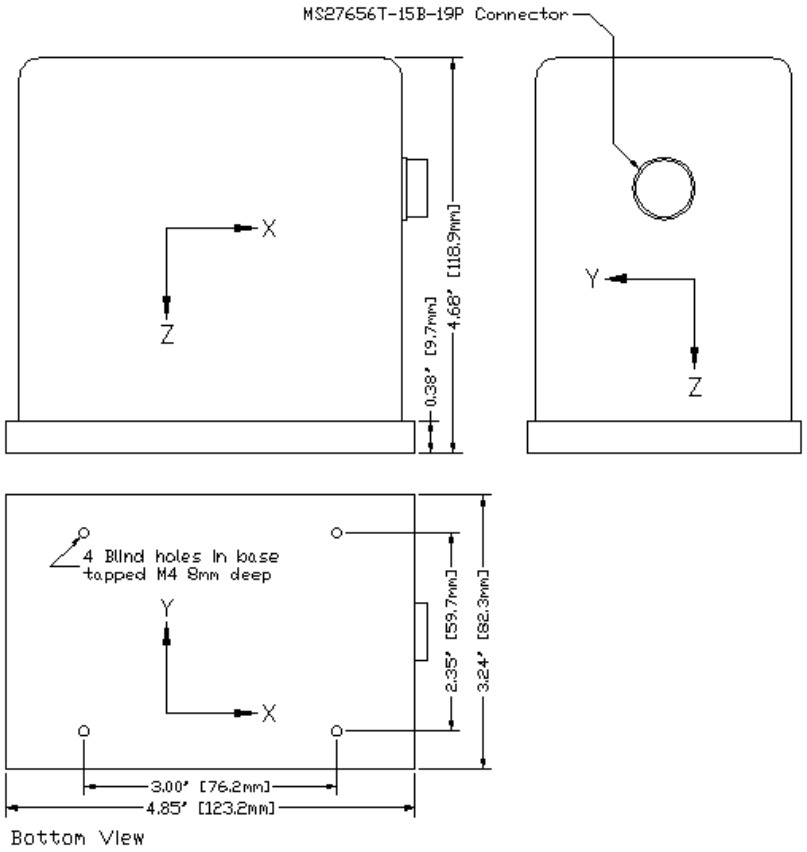
ARS-E322/222 Specifications*

Range	±50 °/s High, ±5 °/s Low
Scale Factor	2.5 °/s/V High, 0.25 °/s/V Low
Resolution	0.002 °/sec.
Noise	<0.03 °/sec.
Analog Input Commands	Differential, 0 and +5 volt lines (5 volt differential)
Analog Rate Outputs	Differential, ±10 volt lines (20 volt differential)
G-Sensitivity	0.001 °/sec.(G), Negligible (G^2)
Hysteresis	Negligible
Frequency Response	DC-70Hz, 90° phase shift
Sensor Alignment	<0.2° Error-All Sensors
Reliability	>30,000 Hours MTBF
Digital Output	RS-232 serial communications (adjustable baud rate)
Shock Resistance	1000 g
Vibration Resistance	5g RMS, 20 to 2000 Hz.
Weight	2.2 lbs. (1.0 kg)
Power	+10VDC to +40VDC, <10 Watts, +24VDC Nominal
Size	See Drawing
Temperature Range	-40°C to +70°C

* Subject to change without notice.



Input Commands

Scale	Line A high - 50 °/sec, Line B high - 5 °/sec.
Hold	Line A high - Hold integration, Line B high - Normal
Set	Line A high - Rapid integration, Line B high - Normal

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