

ARS-03

Angular Rate Sensor

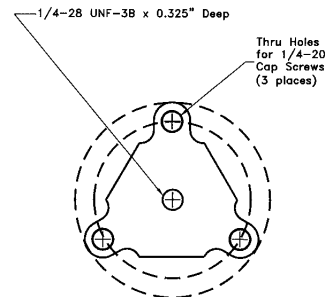
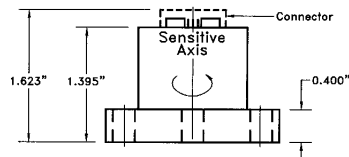
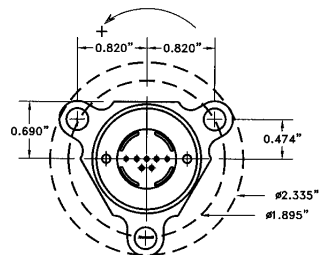


The ARS-03 is a versatile high-sensitivity angular rate sensor originally developed for line-of-sight instruments, imaging systems, and platform stabilization applications. It is 10 times more sensitive than the ARS-01 series and has a noise floor only 10% that of the ARS-01 while retaining the characteristic ruggedness and durability for which the ATA sensors have become famous. The ARS-03 can be used for motion analysis in such diverse areas as automotive steering analysis, vibration analysis in aircraft structures and in instrument masts, or stabilization of imaging or laser platforms and antennas.

The standard frequency response of MHD sensors can be extended significantly by the use of digital filtering in post processing of signal data as covered in ATA Sensors' application note AN-01. Typical digitally processed frequency responses allow use of the sensors to measure to frequencies below 0.1 Hz. A sample MATLAB program is available without charge. With an accessory ILC unit, rate and acceleration signal outputs, amplification of signal outputs to 1000x, and/or single voltage operation of the ARS-03 are options.

The ARS-03 has a strong 3 point mounting flange and case of stainless steel. It can be ordered with custom scale factor and sensitivity, and can also be supplied in a triaxial array on a custom order basis.

The ARS-03 requires use of the CA-01 cable for direct connection to power and data analysis systems. For use with the optional ILC units, the CA-02A and CA-03A cables are required. Refer to the Product Order Guide for cables and compatibilities.



Automobile Motion Testing

Platform Stabilization

Crash Testing

Aircraft Ejection Testing

Modal Analysis

Aerospace Controls

Machinery Monitoring

ATA Sensors

"Sensing ways to make the world better."

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Specifications

ATA Sensors' patented angular motion sensors utilize the finest materials and workmanship combined in durable packages that feature:

- No moving parts
- Dynamic range > 100dB
- Hermetically sealed units
- Low power consumption
- Low cross axis angular sensitivity
- Low linear acceleration sensitivity
- Integral electronics / low noise
- High survivable shock limits
- Superior applications support
- One-year warranty against defects in materials and workmanship on sensors, 90 days on cables.

All data is believed correct at time of publication. Specifications are subject to change without notice. Requires interface cable CA-01. ARS-03ds/8.98

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Angular Rate Sensor

Dynamic

ARS-03 Range ¹	±20 radian/sec (±1200 degree/sec)
Sensitivity ²	500 mV/radian/sec (8.7 mV/degree/sec)
Bandwidth	0.5 to 1000 Hz
Cross-axis Angular Error	< 2%
Linear Acceleration Sensitivity	< 0.005 radians/sec/g (<0.3 degree/sec/g)
Voltage Noise PSD ³	2.5 x 10 ⁻¹⁰ V ² /Hz
Noise Equivalent Angle	< 10 microradians (rms)
Non-linearity	< 1%
Temperature Coefficient ⁴	< 0.05% Scale Factor / °C

Electrical

Excitation Voltage	±5.0 to ±15.0 Vdc
Power Dissipation	< 0.25 Watts
Output Impedence	< 100 Ohms
Grounding ⁵	Case (isolated from mounting base)

Mechanical

Diameter	55.3 mm (1.32 inches)
Height	38.0 mm (1.51 inches)
Weight	264 gm (9.3 oz.)
Case material	Stainless Steel 430
Mounting	1/4 - 20 x 1" screw (3)

Environmental

Temperature - operating	-35 to +60°C (-31 to +140°F)
Temperature - non-operating	-60 to +60°C (-51 to +212°F)
Humidity	Unaffected - Hermetically sealed unit
Linear Acceleration ⁶ , Max operating	.500 g any axis
Linear Acceleration ⁶ , Max survivable	3,000 g any axis

Notes:

1. Peak-to-peak @ ±15Vdc dual power supply
2. Measured @ 10 Hz
3. Power spectral density flat to angular velocity over specified bandwidth.
4. Percent change in Scale Factor per °C @ 100 Hz
5. Signal return connected to circular case (isolated from triangular base) Do not ground case to mounting fixture to avoid ground loops.
6. Peak, 100Hz half sine

