

ARS-09 TRIAXIAL

MHD Angular Rate Sensor Array



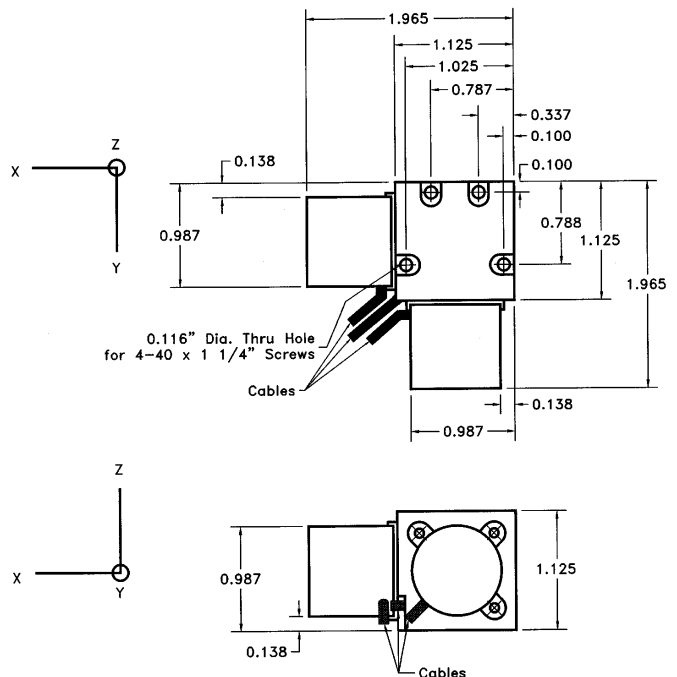
The ARS-09 triaxial array is a versatile 3 axis angular rate sensor array which offers an economical price while meeting the shock and acceleration limits required in most general testing methods. It exhibits a high sensitivity with low to moderate angular range.

The triaxial kit includes three ARS-09 sensors and a triaxial mounting block, which becomes a 6 degree-of-freedom measurement system with 3 optional linear accelerometers added to its mounting surfaces. The type of linear accelerometers to be mounted must be specified at time of order to insure correct mounting holes are included in the triaxial block. If none is specified, the block will be supplied predrilled for use with the Endevco model 7290 series accelerometers.

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.

Input voltages of ± 5 to ± 15 Vdc are required. With our optional ILC units, single voltage input and/or acceleration or amplified outputs are available options.

Integral cable assemblies eliminate connectors and allow the sensors to connect directly to measurement equipment. The optional accessory ILC-03 allows operation from a single power voltage, and offers either acceleration output or gain from the three sensor channels (specify ARS-09A if the ILC box is to be used). Refer to the Product Order Guide for ILC compatibility.



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 MHD 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.
ARS-09Triaxialds/8.98

Notes:

1. Peak-to-peak @ $\pm 15\text{Vdc}$ 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 $^{\circ}\text{C}$ @ 100 Hz
5. Signal return (isolated from mounting fixture) Do not ground case to mounting fixture to avoid ground loops.
6. Peak, 100Hz half sine
7. Not including cables

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Dynamic

ARS-09 Triaxial Range ¹	± 1.75 Radian/sec (± 100 degree/sec)
Sensitivity ²	5,700 mV/radian/sec (100 mV/degree/sec)
Bandwidth	0.3 to 1000 Hz
Cross-axis Angular Error	< 2%
Linear Acceleration Sensitivity	< 0.009 radians/sec/g (<0.5 degree/sec/g)
Voltage Noise PSD ³	$1.1 \times 10^{-6} \text{V}^2/\text{Hz}$
Noise Equivalent Angle	< 80 microradians (rms)
Non-linearity	< 0.1%
Temperature Coefficient ⁴	< 0.1% Scale Factor / $^{\circ}\text{C}$

Electrical

Excitation Voltage	± 5.0 to ± 15.0 Vdc
Power Dissipation	< 1.0 Watts
Output Impedence	< 100 Ohms
Grounding ⁵	Case (isolated from mounting fixture)
Cables	Integral, internal connection

Mechanical

Length	50 mm (1.96 inches)
Width	50 mm (1.96 inches)
Height	28.6 mm (1.12 inches)
Weight	175 gm (6.2 oz)
Case material	Stainless Steel 430/Epoxy
Triaxial block	Aluminum 6061-T6
Mounting	#4-40 x 1 1/4" screw (4)

Environmental

Temperature - operating:	-35 to $+60^{\circ}\text{C}$ (-31 to $+140^{\circ}\text{F}$)
Temperature - non-operating	-35 to 100°C (-31 to $+212^{\circ}\text{F}$)
Humidity:	Unaffected - Hermetically sealed unit
Linear Acceleration ⁶ , Max operating	200 g any axis
Linear Acceleration ⁶ , Max survivable	200 g any axis

