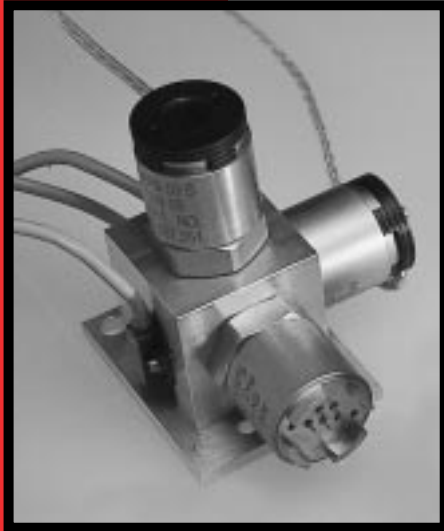


ARS-01 TRIAXIAL

MHD Angular Rate Sensor Arrays



The ARS-01 Triaxial is our most rugged angular rate sensor array. Designed for automobile crash and aircraft ejection testing, the ARS-01 product has become a standard for the world's major automotive manufacturers and test laboratories, and is equally versatile for use in torsional analysis, motion and vibration sensing and control, and aerospace applications. Durable enough to survive years of crash tests, it is available in two standard models: the ARS-01 and the ARS-01S triaxial arrays.

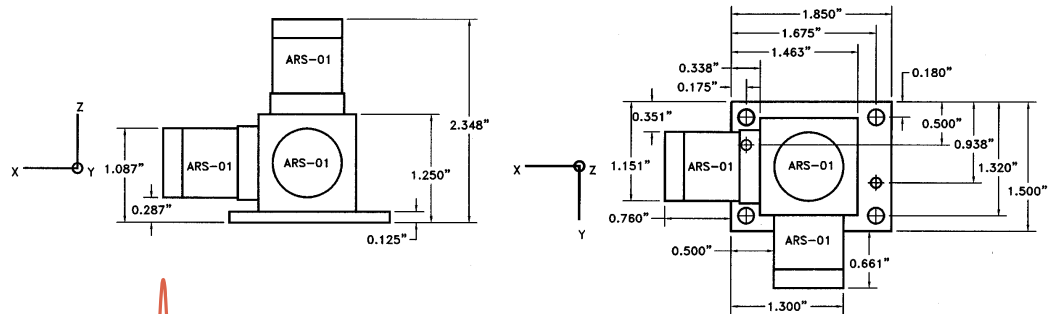
The frequency response of the ARS-01 products comply with SAE J-211 Class 1000 frequency response specification. The standard frequency response of MHD sensors can be extended significantly by the use of digital filtering in post processing of signal data as covered in ATA Sensors' application note AN-01. 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.

The ARS-01 requires ± 5 to ± 15 Vdc power inputs while the ARS-01S utilizes a single +10 Vdc input voltage. Both sensors have the same sensitivity (mV/degree) but the ARS-01S has a 70% lower range. With accessory ILC-03 units, rate and acceleration signal outputs, amplification of signal outputs to 1000x, and/or single voltage operation of the ARS-01 triaxial array are options.

The triaxial kit includes three ARS-01 or ARS-01S sensors and a triaxial mounting block, which becomes a 6 degree-of-freedom measurement system with 3 optional linear accelerometers (shown above) 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 7264A/7265 series accelerometers.

Custom scale factors and ranges are available for each axis as an option.

The ARS-01 triaxial arrays require three of the CA-01 cables 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.



"Sensing ways to make the world better."

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Automobile Motion Testing

Platform Stabilization

Crash Testing

Aircraft Ejection Testing

Modal Analysis

Aerospace Controls

Machinery Monitoring

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. Requires interface cable CA-01 (3 ea.)
ARS-01Triaxialds/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 connected to case (isolated from hex base and mounting fixture) Do not ground case to mounting fixture to avoid ground loops.
6. Peak, 100Hz half sine

ARS-01 & 01S TRIAXIAL

MHD Angular Rate Sensor Arrays

Dynamic

| | |
|--------------------------------------|---|
| ARS-01Triaxial Range ¹ | ± 200 radian/sec ($\pm 11,500$ degree/sec) |
| ARS-01S Triaxial Range ¹ | ± 70 radian/sec ($\pm 5,000$ degree/sec) |
| Sensitivity ² | .50 mV/radian/sec (0.87 mV/degree/sec) |
| Bandwidth | 0.3 to 1000 Hz |
| Cross-axis Angular Error | < 2% |
| Linear Acceleration Sensitivity | < 0.005 radians/sec/g (<.03 degrees/sec/g) |
| Voltage Noise PSD ³ | $1.1 \times 10^{-10} \text{V}^2/\text{Hz}$ |
| Noise Equivalent Angle | < 80 Microradians (rms) |
| Non-linearity | < 0.1% |
| Temperature Coefficient ⁴ | < 0.05% Scale Factor / $^{\circ}\text{C}$ |

Electrical

| | |
|----------------------------|---------------------------------------|
| ARS-01 Excitation Voltage | ± 5.0 to ± 15.0 Vdc |
| ARS-01S Excitation Voltage | ± 10.0 Vdc |
| Power Dissipation | < 0.3 Watts |
| Output Impedence | < 100 Ohms |
| Grounding ⁵ | Case (isolated from mounting fixture) |

Mechanical

| | |
|------------------|--|
| Size (L x W x H) | .66 x .56 x .60 mm (2.6 x 2.2 x 2.35 inches) |
| Weight | .220 gm (8 oz.) |
| Case material | Stainless Steel 430 |
| Mounting | .10-.32 x 3/8 screw (4) 2Nm (18 inch-lb) |

Environmental

| | |
|---|--|
| Temperature - operating | -35 to $+60^{\circ}\text{C}$ (-31 to $+140^{\circ}\text{F}$) |
| Temperature - non-operating | -60 to 100°C (-51 to $+212^{\circ}\text{F}$) |
| Humidity | Unaffected - Hermetically sealed unit |
| Linear Acceleration ⁶ , Max operating | 1,000 g any axis |
| Linear Acceleration ⁶ , Max survivable | 3,000 g any axis |

