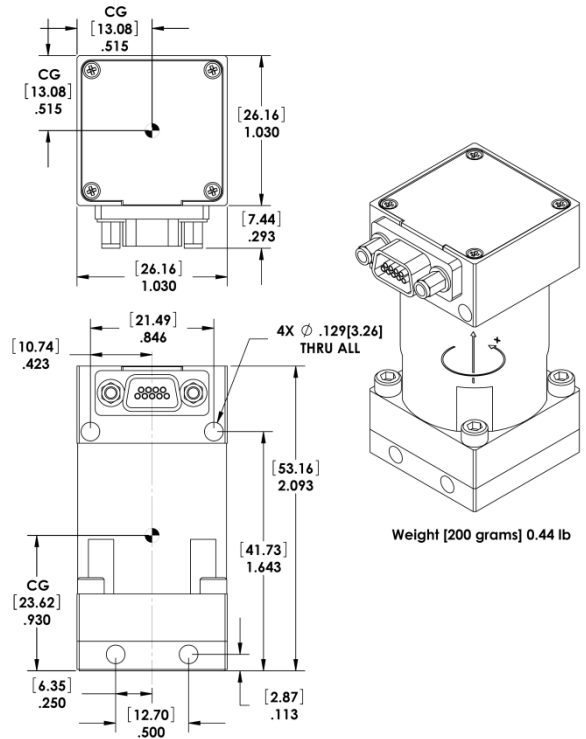


Installation and Operation Manual

ARS-14 MHD Angular Rate Sensor



Handling



The ARS contains sensitive electronic devices. Observe proper ESD handling procedures.

Cleaning

The ARS was cleaned at the manufacturer before shipment. If necessary, the ARS can be re-cleaned with a lint-free cloth and 2-Propanol.

Unpacking

Unpack the ARS at a clean and static-safe workstation. The handler should be properly grounded with a wrist strap.

Storage

The ARS should be stored in a static dissipative or conductive container. Do not exceed the storage temperature ranges listed on the data sheet.

Transporting

The ARS should only be transported in a static dissipative or conductive container. Remove the ARS from the container only at a clean and static-safe workstation. Take care not to drop the ARS because sharp impacts can cause damage.

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Electrical Connection

The ARS-14 has an MDM-9SH002P 9-Pin Mini-D connector. The mating connection is the MDM-9PH004P pig-tail connector.

ARS-14 Pinout		
Pin	Color	Connection
1	Black	Temperature Sensor Negative
2	Brown	Temperature Sensor Positive
3	Red	Ground
4	Orange	Signal Out
5	Yellow	N/C
6	Green	Positive Supply Voltage (+5 VDC to +18 VDC)
7	Blue	Negative Supply Voltage (-5VDC to -18 VDC)
8	Violet	Ground
9	Gray	Case

Pin 1, Temperature Sensor Negative- This is the negative terminal of the temperature sensor. The temperature sensor is model AD590KF. The temperature sensor is a current source with output current proportional to absolute temperature in Kelvin. The scale factor is nominally $1\mu\text{A}/\text{K}$ and the temperature sensor is adjusted to give $298.2\ \mu\text{A}$ of current at $298.2\ \text{K}$ (25°C). For more information, see the datasheet available from Analog Devices.

Pin 2, Temperature Sensor Positive- This is the positive terminal of the temperature sensor. The temperature sensor is model AD590KF. The temperature sensor is a current source with output current proportional to absolute temperature in Kelvin. The scale factor is nominally $1\mu\text{A}/\text{K}$ and the temperature sensor is adjusted to give $298.2\ \mu\text{A}$ of current at $298.2\ \text{K}$ (25°C). For more information, see the datasheet available from Analog Devices.

Pin 3, Ground- The supply voltages are referenced to this pin. The rate signal output is also referenced to this pin.



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Pin 4, Signal Out- This signal is an analog voltage proportional to angular rate. The scale factor and bode plots are given in the calibration test data sheet supplied with each sensor.

Pin 5, No Connection

Pin 6, Positive Supply Voltage- The ARS-14 will operate on any positive supply voltage from +5 VDC to +18VDC. The positive and negative supply voltages should be matched in magnitude. For example, +/-5 VDC or +/-10 VDC but not +5/-10 VDC.

Pin 7, Negative Supply Voltage The ARS-14 will operate on any negative supply voltage from -5 VDC to -18VDC. The positive and negative supply voltages should be matched in magnitude. For example, +/-5 VDC or +/-10 VDC but not +5/-10 VDC.

Pin 8, Ground- The supply voltages are referenced to this pin. The rate signal output is also referenced to this pin.

Pin 9, Case-This pin shorted to the ARS-14 case. It is not the same as pins 3 and 8. There is a 1 M-ohm resistor in parallel with a 1 μ F capacitor from this pin to ground (pins 3 and 8). This prevents excessive charge from building up on the case and keeps the case potential close to 0V. If there is excessive noise on the rate signal, shorting this pin to ground may alleviate the problem.

Mounting

The ARS-14 is mounted using four #4 screws. See drawing for the mounting pattern. The user should ensure the screws are sufficient for dynamic loading conditions.

Health and Status

When power is applied to the ARS, the signal voltage will swing between its maximum output voltages before settling out at the null. The signal voltage should settle to its final null value within 2-3 minutes after a cold power-on. When the ARS is quiescent (no motion), the signal voltage should remain at its null. Note that very small motions are detectable by the ARS and can cause the signal voltage to change. The temperature sensor can be used to monitor the temperature inside the ARS-14 and may also be used to correct the signal output based on temperature.

This product is subject to U.S. Government approval as required in accordance with the U.S. Government International Traffic in Arms (ITAR) Subchapter M, Title 22, Code of Federal Regulations, Parts 120 through 130 (22 CFR 120-130). Specifications subject to change without notice.



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