



## 31207B Triaxial Angular Rate Sensor

### SPECIFICATIONS

- Rugged Triaxial Angular Rate Gyro
- Silicon MEMS Gyro, DC Response
- $\pm 1000^\circ/\text{sec}$  Dynamic Range
- $< \pm 6^\circ/\text{sec}$  Offset Stability
- 8.5 to 36Vdc Excitation Voltage

### FEATURES AND BENEFITS

#### Self-Test on Digital Command

A TTL-compatible self-test input causes a simulated rotational rate to be injected into all three sensors to verify channel integrity.

#### Rugged for Harsh Environment

The 31207B is robust to perform well in harsh environments. The 6061-T6 case with electroless nickel finish plus a PTFE cable with a shield bonded to the case provide improved resistance to EMI, lightning, or other disturbances.

#### High Accuracy and Linearity over Wide Temperature Range

The output of each axis of the model 31207B sensor is directly proportional to the rotational rate about that axis. Each DC-coupled output is fully scaled, referenced, and temperature compensated. When used in demanding temperature environments, gain compensation makes the 31207B one of the most accurate angular rate gyros available.

The TE Connectivity model 31207B Triaxial Angular Rate Sensor is a rugged analog gyroscope capable of accurately measuring angular rate around the three orthogonal axes. The sensor is packaged in a tough, compact housing with fully encapsulated and protected electronics and a shielded #30 AWG cable. Its cubical form allows mounting in any three orientations.

The model 31207B Gyroscope Sensor provides enhanced accuracy and durability features to meet the challenges of harsh installations. In addition to its robust construction, increased precision is achieved through enhanced offset and gain compensation over full operating temperature range.

Each angular rate sensor has been accurately tested and compensated over the full  $-40^\circ\text{C}$  to  $+85^\circ\text{C}$  temperature range and has a nominal full scale output swing of  $\pm 2.25\text{V}$ . The zero rate output level is nominally  $+2.5\text{V}$ .

## PERFORMANCE SPECIFICATIONS

All values are typical at +24°C and 12Vdc excitation unless otherwise stated. TE Connectivity reserves the right to update and change these specifications without notice.

### Parameters

#### DYNAMIC

|  |               |
|--|---------------|
| Dash Number                                | -R1K0         |
| Range (deg/sec)                            | ±1000         |
| Sensitivity (mV/deg/sec)                   | 2.0 each axis |
| Frequency Response (Hz)                    | 0-100         |
| Non-Linearity (%FSO)                       | ±0.1          |
| Alignment (deg)                            | ±1.5          |
| Influence of Linear Acceleration (°/sec/g) | 0.2           |
| Shock Limit (g)                            | ±2000         |
| Noise Density (°/sec/√Hz)                  | 0.1           |

#### Notes

See Ordering Info  
 ±10%  
 Upper cutoff -3dB  
 BFSL  
 Deviation from ideal axes  
 Affects offset  
 0.5msec pulse

#### ELECTRICAL

|                                 |                                |
|---------------------------------|--------------------------------|
| Zero Acceleration Output (V)    | 2.50 ±0.10                     |
| Excitation Voltage (Vdc)        | 8.5 to 36                      |
| Excitation Current (mA)         | 18 typical (30 max)            |
| Rejection Ratio (dB)            | >120                           |
| Full Scale Output Voltage (Vpk) | 0.25 to 4.75                   |
| Insulation Resistance (MΩ)      | >100                           |
| Output Impedance (Ω)            | 100                            |
| Turn On Time (msec)             | <100                           |
| Ground Isolation                | Isolated from Mounting Surface |

No load, quiescent  
 DC  
 Iout = 1mA, cap load <1000pF  
 @100Vdc

#### SELF TEST FUNCTION

|  |   |
|--|---|
| Response with self-test pin grounded<br>±1000°/sec FSO | 0.125V  |
| Self Test Input Impedance (kΩ)                         | 10 minimum (Pullup. Logic "1" ≥ 3.5V, Logic "0" ≤ 1.5V) |

#### TEMPERATURE SENSOR

|                      |      |
|----------------------|------|
| Sensitivity (mV/°C)  | 9.0  |
| +25°C Bias Level (V) | 2.50 |

#### ENVIRONMENTAL

|   |                          |              |
|---|--------------------------|--------------|
| Thermal Zero Shift (°/sec)              | ±3.0 typical (±6.0 max)  | -40 to +85°C |
| Thermal Sensitivity Shift (%)           | ±2.5                     | -40 to +85°C |
| Operating Temperature (°C)              | -40 to +85               |              |
| Humidity (Active Element & Electronics) | Hermetically Solder Seal |              |
| Humidity (Housing)                      | Epoxy Sealed, IP65       |              |

#### PHYSICAL

|                             |  |
|-----------------------------|--|
| Case Material               | Electroless Nickel Plated 6061-T6 Aluminum                             |
| Cable                       | 9x, #30 AWG Conductors, PTFE Insulated, Tin Plated Shield, PTFE Jacket |
| Connector                   | 9-pin DB9 Male Connector Installed at End of Cable                     |
| Weight (cable not included) | 38 grams   |
| Mounting                    | 2x M3-0.5 Machine Screws   |
| Mounting Torque             | 5 lbf-in (0.56 N-m)  |

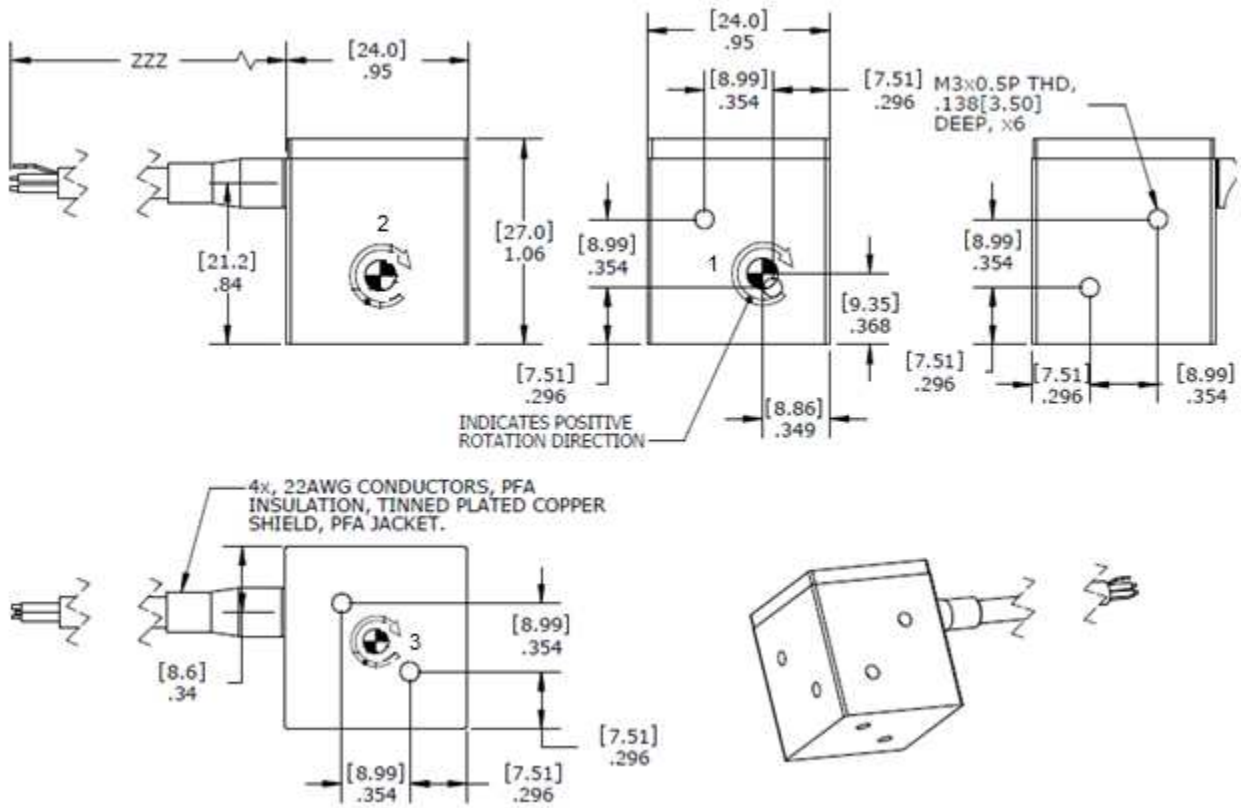
**Calibration supplied:** CS-ARLIN      NIST Traceable Calibration with Sensitivity and Offset

**Optional accessories:** 34170B      Adaptor Plate for Flange Mounting

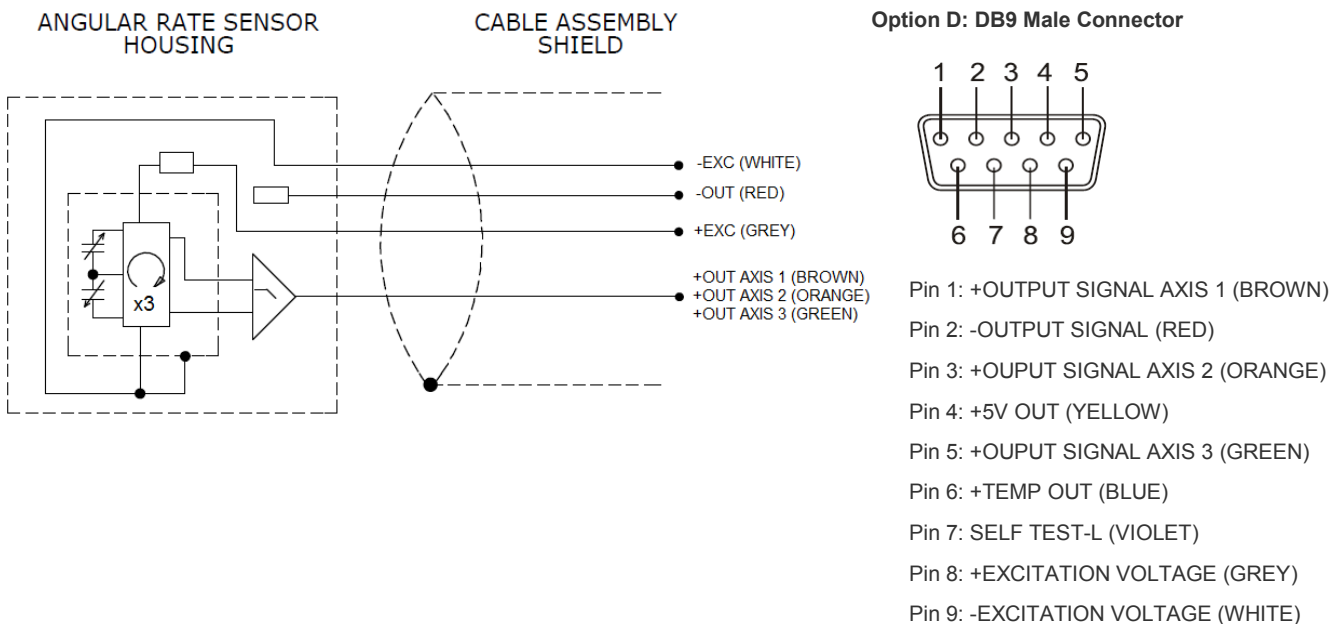
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# 31207B TRIAXIAL ANGULAR RATE SENSOR

## DIMENSIONS



## SCHEMATIC



## ORDERING INFORMATION

**31207B**                      **RXXX**                      **BYYY**                      **TZZZ**

### Range

R1K0 =  $\pm 1000$ deg/sec

### Bandwidth

B100 = 0 to 100Hz (standard option)

### Cable Length

T004 = 4ft cable (standard option)

TZZZ = Contact factory for custom length (ZZZ in feet)

Example; 31207B-R1K0-B100-T004

Model 31207B,  $\pm 1000$ deg/sec range, 0-100Hz bandwidth, 4ft cable length

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