

# Triaxial Rate Gyro

## $\pm 1200^\circ/\text{sec}$ Range

## $< \pm 6^\circ/\text{sec}$ Offset Stability

## -40 to $+85^\circ\text{C}$ Temperature Range

### Technical Data\*

#### Features and Benefits

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

The voltage output for each axis of the 31207A is directly proportional to the rotational rate along that axis. Each DC-coupled output is fully scaled, referenced, and temperature compensated. Accuracy is improved by minimizing variations due to temperature and aging effects, resulting in a sensor that is stable over temperature.

##### Calibration Certificate

Each 31207A is supplied with a calibration certificate listing gain, offset, and on-axis and transverse alignment parameters needed to ensure rapid and efficient system implementation. The alignment data can be used to compensate the measured values to achieve an even higher level of sensor accuracy.

##### 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.

##### Small Size

Complete conditioned triaxial rate gyro in less than a cubic inch.

##### Built-in Power Supply Regulation

Unregulated DC power from +8 to +36 volts is all that is required to measure rotational rates on all axes.

##### Suitable for Harsh Environments

The 31207A is robust and can be used in harsh environments. The unit will survive 2000 g powered and unpowered.

##### Three Year Warranty

Summit Instruments 31207A Triaxial Rate Gyros are covered by a three year return to factory warranty.



### Precisely Measure Real-World Rates

The Summit Instruments 31207A Triaxial Rate Gyro is capable of sensing angular motion around three orthogonal axes. Fully temperature compensated analog outputs are available for the X, Y, and Z axes.

Unregulated +8 to +36V DC power is all that is required to measure  $\pm 1200^\circ/\text{sec}$  rotational rates, on each of three axes.

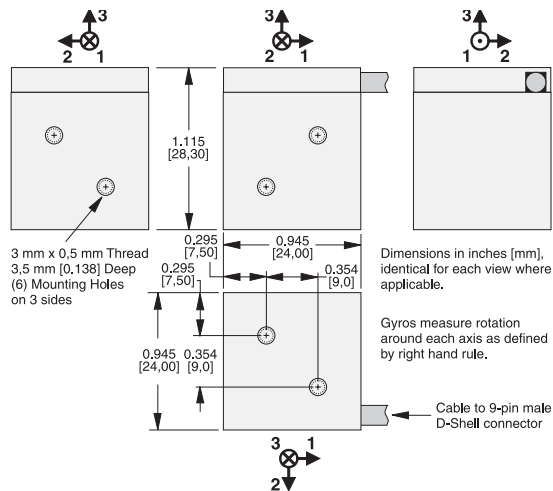
Each axial sensor has been tested over the -40 to  $+85^\circ\text{C}$  temperature range and has a nominal full scale output swing of  $\pm 2$  volts. The zero rate output level is nominally +2.5 volts. Precise values for each axis are available on a calibration certificate. Custom versions of the 31207A can be provided for applications which require different ranges and/or bandwidths.

## Specifications

$T_A = T_{MIN}$  to  $T_{MAX}$ ,  $8 \leq V_S \leq 36$  V, Acceleration =  $\pm 1$  g, Angular Rate =  $0^\circ/\text{sec}$  unless otherwise noted.

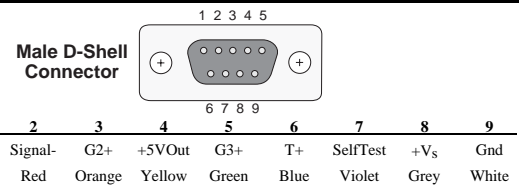
Parameter	Min	Typical	Max	Units	Conditions/Notes
<b>Range</b>					
Measurement Full Scale		$\pm 1200$		$^\circ/\text{sec}$	On each axis. Must specify via Opt. Rnnn
Shock survival	-2000		+2000	g	Any axis for 0.5 ms., powered or unpowered
<b>Sensitivity @ 25°C</b>					
$\pm 1200^\circ/\text{sec}$ FSR	4.6		5.4	mV/ $^\circ/\text{sec}$	Precise values on cal certificate.
Drift $T_{MIN}$ to $T_{MAX}$		2.5		% FSR	
<b>Zero G Bias Level</b>					
At 25°C	2.45	2.50	2.55	V	Precise values on cal certificate.
Drift $T_{MIN}$ to $T_{MAX}$		$\pm 3.0$	$\pm 6.0$	$^\circ/\text{sec}$	
<b>Alignment</b>					
Deviation from ideal axes		$\pm 1.5$		degrees	Precise values on cal certificate. Can be compensated if required.
<b>g Sensitivity</b>		0.2		$^\circ/\text{sec}/\text{g}$	Affects offset
<b>Nonlinearity</b>		0.1		% FSR	Best fit straight line.
<b>Upper Cutoff Frequency</b>		100		Hz	$\pm 10\%$
<b>Noise Density</b>		0.1		$^\circ/\text{sec}/\sqrt{\text{Hz}}$	
<b>Self Test Input Impedance</b>		50		k $\Omega$	To ground.
<b>Temperature Sensor</b>					
Sensitivity		8.4		mV/ $^\circ\text{K}$	Precise values on cal certificate.
+25°C Bias Level		2.5		V	
<b>Outputs</b>					
Output voltage swing	0.25		4.75	V	$I_{OUT} = 1$ mA, Capacitive load < 1000 pF
<b>Power Supply (Vs)</b>					
Input voltage limits	-20		+38	V	-20V continuous, >30V if <100ms, duty <1%
Input voltage - operating	+8		+36	V	
Input current		28	38	mA	No load, quiescent.
Rejection Ratio	80	120		dB	DC
<b>Temperature Range (TA)</b>	-40		+85	$^\circ\text{C}$	
<b>Mass</b>		35		g	

## Mechanical



Two 3 mm  $\times$  0.5 mm threaded holes are provided on each of three orthogonal faces for mounting.

## Connections



## Ordering Information

**35207A** Triaxial Rate Gyro  
(-Tnnn options required)

- Tnnn Termination via nnn foot cable with 9-pin male D-subminiature connector at end
- T000 Termination via 9-pin BERG Conan connector, includes mate, for PCB mounting.