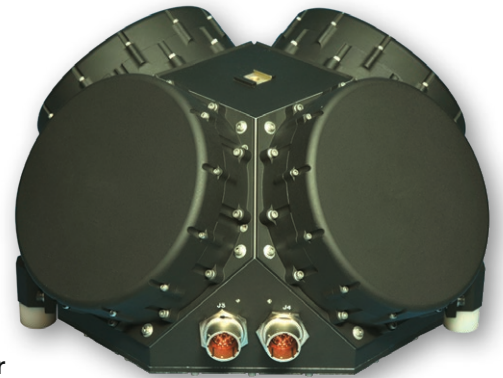
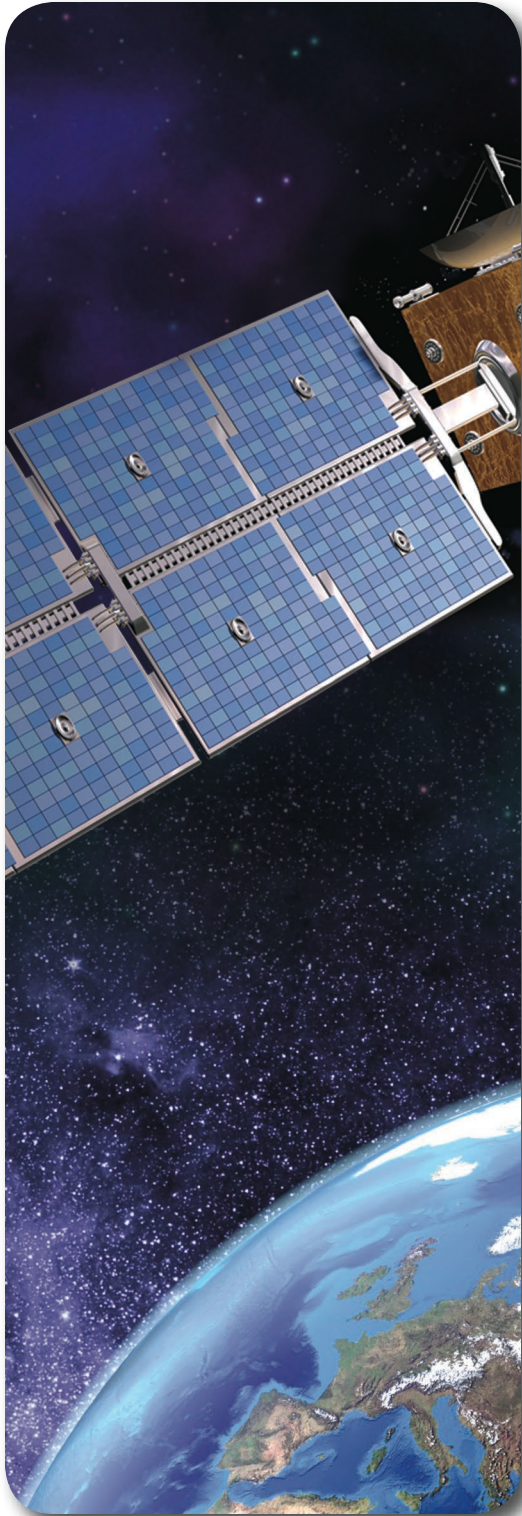


CIRUS & CIRUS EX – COMPACT INERTIAL REFERENCE UNITS FOR SPACE



Cost-Effective, Next-Generation, Strategic-Grade Fiber Optic Gyros



L3 Technologies has been the premier supplier of mission-critical precision pointing and navigation systems since the early days of the U.S. space program. Leveraging over sixty years of experience and proven performance in systems deployed in space, we have designed and qualified the Compact Inertial Reference Unit for Space (CIRUS) as the next-generation product of our heritage system. The CIRUS and CIRUS-EX rate sensors deliver two different strategic grades of performance combined with the benefits of a compact, low-cost system in an integral chassis. Both CIRUS and CIRUS-EX systems feature four Fiber Optic Gyro (FOG) sensors in a fully redundant configuration for spacecraft attitude control, supporting DoD, NASA and commercial missions.

KEY FEATURES:

- Two performance grades with lowest ARW < 100 $\mu^{\circ}/\sqrt{\text{hr}}$
- Four gyros and dual A/B electronics provide optimal redundancy for enhanced mission success
- Dual-redundant serial interfaces (MIL-STD-1553 and RS-422) to permit flexible I/O rates
- High-reliability Class S and Class K rad-hard electronics
- Each sensor is individually power-selectable providing ultimate flexibility for the end user
- User-selectable thermal set points permit optimal operation over changing mission environments
- User-selectable capability to execute “on-station” commands for optimal situational awareness
- Conductive or radiative vehicle-mount options
- Telemetry format can be customized for any specific user interface

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Specifications

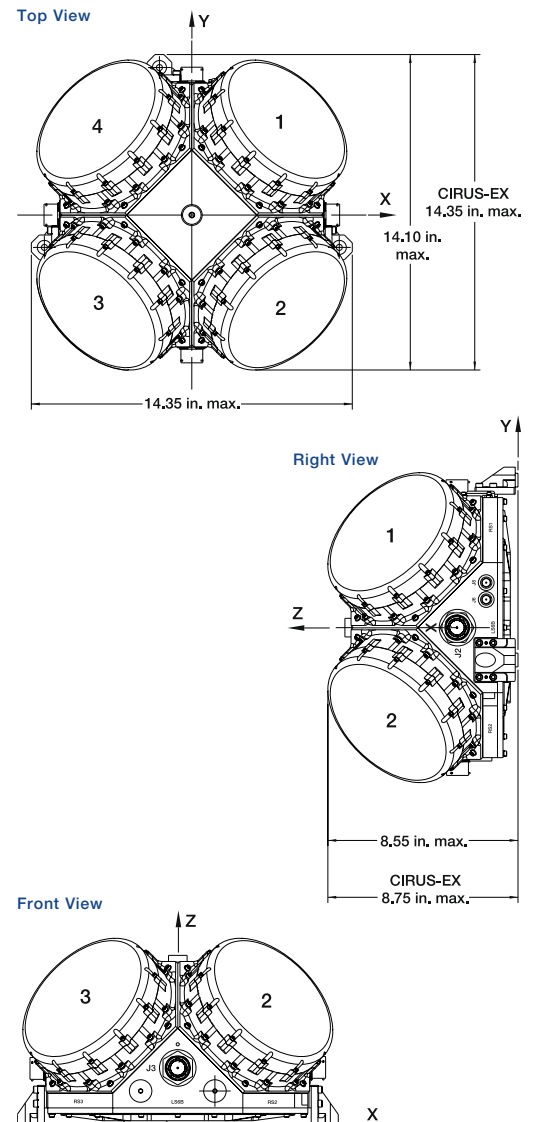
PERFORMANCE

	CIRUS	CIRUS-EX
Bias Stability (1σ)	0.0003 °/hr.	0.0003 °/hr.
Angle Random Walk (EOL)	0.000190 °/√hr. (< 0.000150 available)	0.000125 °/√hr. (< 0.000100 available)
Angle White Noise	0.000025 arc-sec./√Hz (0.000006 typical)	0.000025 arc-sec./√Hz (0.000006 typical)
Angular Rate Range	> 30 °/sec.	> 22 °/sec.
SF Stability	± 2 ppm	± 2 ppm
SF Linearity (maximum)	35 ppm (3 typical)	35 ppm (3 typical)
Alignment Stability	< 3.5 arc-sec. (long term) < 20 arc-sec. (life)	< 3.5 arc-sec. (long term) < 20 arc-sec. (life)

CHARACTERISTICS

	CIRUS	CIRUS-EX
Weight	34.0 lb., 15.4 kg	37.0 lb., 16.8 kg
Dimensions (fits within cylinder)	$\varnothing 15.8$ in. x 8.6 in. $\varnothing 400.1$ mm x 217.2 mm	$\varnothing 16.6$ in. x 8.8 in. $\varnothing 421.6$ mm x 223.5 mm
Power	28 to 70 V input, steady-state, 3 gyros operational ≤ 40 W	
Reliability (30 °C)	> 0.93 Probability of success (Ps) for 15-yr. life, continuous operation	
Telemetry	RS-422, MIL-STD-1553; FPGA-based interface can be modified without hardware change to meet customer-specific requirements	
Operational Temperature	-23 °C to $+41$ °C, with > 14 °C temperature variations	
Random Vibration	9.45 G_{RMS} (Root-Mean-Square) lateral and nominal	
Pyrotechnic Shock	14 G @ 100 Hz, 630 G @ 1,250 Hz, 2,100 G @ 2,500 Hz, 2,700 G @ 10,000 Hz	
Radiation	> 100 krad total dose SEU-tolerant Latchup immune	

TECHNICAL DRAWINGS



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