The Northrop Grumman LR-2000 is a small, lightweight, highly reliable, strap down inertial measurement unit (IMU). The LR-2000 is composed of two dual-axis dynamically-tuned gyroscopes and three solid-state silicon Micro Electro-Mechanical Systems (MEMS) accelerometers. Digital output data of incremental velocity and incremental angle are transmitted to the user on a full duplex RS-422 interface.

**Description**
The LR-2000 IMU was designed and qualified for the F-16 fighter jet and has been in production since 2005, with hundreds of units produced. The LR-2000 IMU has 0.05°/√hr random walk and low white noise for superior performance. The two gyros and three accelerometers are part of the sensor block package that is separated from the three electronics cards package and can be mounted independently, allowing for ease of integration where space is limited. A key component of the LR-2000 IMU is its dual-axis gyroscope that offers superior accuracy and high reliability of more than 100,000 hours between failures. The MEMS accelerometers have superior performance and reliability with bias repeatability of 300 µg and scale factor accuracy of 100 ppm. The LR-2000 IMU is qualified for military applications.

**Advantages**
- Low gyro and accelerometer white noise and high mean time between failure
- Low random drift of <1° per hour
- Low random walk of <0.05°/√hr
- Sensor block and electronics mounted separately
- Qualified for the F-16 fighter environments
- Commercial off-the-shelf product with a lead time of less than 10 months after receipt of order

**Applications**
- EO/IR, FLIR, camera and radar stabilization
- Gimbal and platform stabilization
- Tactical missile guidance
- Targeting and gyro compassing applications
- Flight controls
- Downhole measuring
### LR-2000 Rate Sensor Assembly

#### Performance
- **Random walk**: <0.05°/√hr
- **Bandwidth**: 100 Hz (-90)
- **Communication**: Full duplex RS-422 UART serial data bus

#### Characteristics
- **Dimensions (sensor block)**: Length: 2 in. (5.08 cm), Width: 1.5 in. (3.81 cm), Height: 1.5 in. (3.81 cm)
- **Dimensions (card stack)**: Length: 4 in. (10.16 cm), Width: 1.5 in. (3.81 cm), Height: 1 in. (2.54 cm)

#### Features
- **Sensor**: Two dual-axis gyros, three solid-state silicon (MEMS) accelerometers, sensor block
- **Output Messages**: 200 Hz

### LR-2000 Gyro

#### Performance
- **Axis Misalignment**: 300 micro-radians
- **Scale Factor Accuracy, In-Run**: 200 PPM
- **Drift Rate, Turn-On and In-Run Over Temperature**: 10°/hr
- **Random Noise PSD, Low Frequency (0.01 Hz to 1.0 Hz)**: <0.0005°/sec/√hz
- **G-Sensitive Drift**: <10°/hr/G
- **G²-Sensitive Drift**: 0.3°/hr/g²
- **Max. Input Range (X-axis ICS) up to 5 seconds**: ±280°/sec
- **Max. Input Range (Y- and Z-axes ICS)**: ±67°/sec
- **Max. Angular Acceleration (all axes)**: ±10,000°/sec

### For more information, please contact:

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