LiMIS-1

MEMS INERTIAL MEASUREMENT UNIT

LITEF is a world leading company with over 60 years of experience in Inertial Systems Technology. With its new generation MEMS (Micro Electro Mechanical Systems) technology sensors, LITEF continues to design high accuracy Inertial Measurement Units (IMUs) to meet current and future requirements.

MEMS sensor design at LITEF started in the early nineties with the B-290, a full silicon accelerometer. This accelerometer has been qualified in systems for attitude heading reference, stabilization and guidance.

LITEF's extensive experience with its IMUs, based on Fiber Optic Gyros and MEMS Accelerometers Triad was the basis of the LiMIS IMU design, resulting in the following advantages for the user:

- Integrated, sealed and self contained unit (3 MEMS rate sensors, 3 MEMS linear accelerometers, electronics, power supply and housing)
- Standard digital interfaces
- Output of fully compensated data (e.g. temperature and misalignment)
- Extensive Built-in-Test features
- High reliability
- Small size, low weight, low power consumption
- Low Life Cycle cost

TYPICAL APPLICATIONS

- Attitude Heading Reference Systems
- Platform stabilization for land, sea, and aerial systems e.g. camera stabilization for aerial survey
- Navigation, guidance, stabilization and control systems for unmanned and manned applications
- Real Time Navigation and Positioning
- Mobile Mapping
- Photogrammetry
- Rail Track Geometry Survey
- Pipeline Stabilization

TECHNICAL DATA LiMIS-1

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RATE SENSOR PARAMETERS	
Measurement Range	± 499 °/s max.
Bias Instability[1)]	≤ 0.1 °/h
Bias over temperature range (RMS)	≤ 1 °/h
Angular Random Walk	≤ 0.05 °/√h
Scale Factor Error over temperature range (RMS)	≤ 500 ppm
Axis Misalignment (RMS)	≤ 1 mrad
Bandwidth	100 Hz
LINEAR ACCELERATION PARAMETERS	
Measurement Range	± 15 g
Bias Instability[1)]	≤ 10 µg
Overall Bias[2)]	> 1250 µg
Random Walk	≤ 25 µg /√h
Scale Factor Error (RMS)	≤ 300 ppm
Axis Misalignment (RMS)	≤ 1 mrad
Bandwidth	100 Hz
SYSTEM PARAMETERS	
Mass	750 g
Dimensions	ø 95 mm x H 87 mm ø 3.74 inch x H 3.43 inch
Volume	617 cm^3, 38 $inch^3$
Supply Voltage	5 VDC
Power Consumption	≤ 10 W
Interface	serial interface with RS-422 levels, UART or HDLC protocol
Data Rate	50 Hz ... 1000 Hz
Built in Test (BIT)	Power up BIT, Continuous BIT
Random vibration level - operational - non-operational	 4.12 g_{RMS} 5.8 g_{RMS}
Shock, operational	40 g / 11 ms
Temperature range - operating - storage	 - 40 °C to + 71 °C - 51 °C to + 85 °C

1) Implying Allan Variance under constant temperature conditions and cluster time 24 h.
2) Residuals over Temperature, Repeatability

FOR MORE INFORMATION,
PLEASE CONTACT:
Northrop Grumman LITEF GmbH
Lörracher Strasse 18
79115 Freiburg | Germany
Phone: +49 761 4901-0
info@litef.de | www.litef.com