B-500 TRIAD

THREE AXIS ACCELEROMETER

LITEF's B-500 TRIAD represents the newest generation of three axis accelerometer, based on the latest MEMS technology. With high performance and quality characteristics, the B-500 TRIAD offers the optimal acceleration measurement solution for customers worldwide from any kind of business.

DESCRIPTION

The B-500 TRIAD is a small, lightweight and highly reliable three axis accelerometer working in closed loop technology with all the associated hybrid electronics, packed in one housing. The output of the compensated data is carried out via a synchronous interface (IBIS – Integrated Bus for Intelligent Sensors).

CONFIGURATION

The B-500 TRIAD is individually configurable, giving customers greater flexibility in terms of measurement range, data format (accelerations/velocity increments) and data compensation.

TYPICAL APPLICATIONS

Perfect in combination with LITEF's fiber optic rate sensors µFORS, the B-500 TRIAD is optimal suited for applications that include:

- Attitude and Heading Reference Systems
- Inertial Navigation Systems
- Stabilization Systems for moving platforms
- Production Automation (e. g. robotics)

CUSTOMER BENEFITS

- Three measurement axis perfectly aligned in one housing
- Acceleration data of all three axis perfectly synchronized
- Extremely compact design
- Output of temperature compensated acceleration data or velocity increments
- High performance under harsh conditions
- High bandwidth
- Low noise
- Built-in test features
- Support in all project phases

TECHNICAL DATA B-500 TRIAD

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PERFORMANCE					
Measurement Range	g	± 5	± 10	± 15	± 20
Resolution (configurable data width: 16, 24, 32 bit)					
- Acceleration at 16-bit data width	mg/LSB	0.15	0.30	0.46	0.52
- Velocity Increment Resolution at 16-bit data width & 50 Hz data rate[1)]	m/s/LSB	2.994e-5	5.988e-5	8.981e-5	1.197e-4
Internal Bandwidth (Sensor)	Hz	≥3000			
Bias					
- Repeatability [turn-off/on][2)]	µg	≤ 50 (1 σ)			
- Temperature Error[3)]	µg	≤ 240 (RMS)			
- Instability [Allan Variance][4)]	µg	≤ 5			
- Vibration Rectification Coefficient (VRC)[5)]	µg/g²	≤ 25			
Scale Factor Error					
- Repeatability [turn-off/on]	ppm	≤ 50 (1 σ)			
- Temperature Error[3)]	ppm	≤ 250 (RMS)			
Misalignment Remount Repeatability	mrad	≤ 1.0 (1 σ)			
Orthogonality Composite Error	mrad	≤ 3 (1 σ)			
Velocity Random Walk [Allan Variance][4)]	µg/√Hz	≤ 20			
Noise (100 Hz & 500 Hz)	µg	≤ 310 (RMS) & ≤ 1050 (RMS)			
ELECTRICAL CHARACTERISTICS					
Power Supply		+5 (4.75 – 5.3) VDC			
Current Consumption		0.36 A max.			
Connector		28 Pins Flatpack (pitch 1.27 mm) [6)]			
Data Interface (serial)		Based on CCITT 1431 T1/E1 (IBIS)			
Data Rate		8 kHz max			
PHYSICAL CHARACTERISTICS					
Size (L x W x H)		62.8 x 50.8 x12.5 mm³			
Weight		80 grams			
ENVIRONMENTAL CONDITIONS					
Operating Temperature Range		- 40 °C to + 85 °C			
Shock, half sine (non-operating)		150 g, 6 ms			
Packaging		Hermetically sealed			

[1)] At other data rates the resolution changes accordingly (higher rate: higher resolution). The LSB value can be configured to the data rate required by the customer.
[2)] Measured over 100 turn-on turn-off cycles.
[3)] Residual bias error over temperature combining day-to-day repeatability. Temperature dependency and instability while excluding g-dependent and rectification error sources.
[4)] Without any acceleration, measured at constant temperature.
[5)] Random Vibration Profile (2-2kHz), 10.8 grms measured @ -40°C, 23°C & 85°C.
[6)] Flexlead connector options available on request.

FOR MORE INFORMATION,
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