B-500C TRIAD

THREE AXIS ACCELEROMETER

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

DESCRIPTION

The B-500C 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-500C 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-500C 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-500C TRIAD

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PERFORMANCE				
Measurement Range	g	± 5	± 10	± 15
Resolution (configurable data width: 16, 24, 32 bit)				
- Acceleration at 16-bit data width	mg/LSB	0.15	0.30	0.46
- 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
Internal Bandwidth (Sensor)	Hz		≥3000	
Bias				
- Repeatability [turn-off/on][2)]	µg		>1250 (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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