

SDI500

Applications

The SDI500 IMU is well suited for high precision applications:

- Precision Guided Munitions
- Tactical Missiles
- Unmanned Aerial Vehicles (UAVs)
- GPS-Aided Navigation Systems
- Torpedos
- Gimbal and Platform Stabilization
- Targeting and Pointing Systems
- Aircraft Precision Attitude and Heading Systems



Description

Systron Donner Inertial's (SDI) new SDI500 is a breakthrough in MEMS-based Inertial Measurement Units (IMUs) and is the first MEMS-based IMU to demonstrate true tactical grade performance with 1%hr bias stability and very low 0.02% $\sqrt{\text{hr}}$ angle random walk. The breakthrough performance of the SDI500 IMU is based on a SDI's proven quartz MEMS inertial sensor technology. SDI's quartz technology enables high volume production of precisely machined sensor structures combined with the inherent large signal output and thermal stability of quartz materials.

The SDI500 is a compact IMU constructed with SDI's next generation quartz gyros, quartz accelerometers, and high speed signal processing that achieves tactical grade performance. The SDI500 IMU is rated for rugged military environments. The solid state quartz sensors and sealed IMU construction provide reliable 25,000+ hr. MTBF, and a 20 year operating and storage life. Continuous Built-in Test (BIT), configurable communications protocols, electromagnetic interference (EMI) protection, and flexible input power requirements make the SDI500 IMU easy to use in a wide range of higher order integrated system applications.



Key Performance Features

- 1%hr Gyro Bias
- 0.02% $\sqrt{\text{hr}}$ Angle Random Walk
 - 5X Better Than Competition
- 19 in.³ Compact Size
- Customer Programmable Output Data Rates
- Superior Quality & Reliability
 - 20 Year Lifetime without Calibration
 - Greater Than 25,000 Hr MTBF

	Units	Measure	SDI500-AA00	SDI500-BA00	SDI500-CA00
System Performance					
Start Up Time for Valid Data Output	secs	max	<1.5		
Bandwidth, Phase (-90°)	Hz	min	75		
Gyro Channels					
Bias	deg/hr	1 σ	1	3	10
Bias In-Run Stability	deg/hr	1 σ	<1.0	<1.0	<1.0
Scale Factor Error	ppm	1 σ	<300	<300	<400
Angle Random Walk	deg/ \sqrt hr	nom	0.02	0.02	0.04
Angular Rate – Dynamic Range	deg/sec	min	\pm 1000	\pm 1000	\pm 1000
Accelerometer Channels					
Bias	milli-g	1 σ	0.5	1	2
Bias In-Run Stability	micro-g	1 σ	200	200	200
Scale Factor Error	ppm	1 σ	<200	<300	<300
Acceleration - Calibrated Range	g	min	\pm 50	\pm 50	\pm 50
System Physical & Environmental					
Input Voltage	Vdc		10 to 42		
Power	watts		<5.0		
Dimensions (height x diameter)	in		2.9 x 2.9		
Volume	cu in		19		
Weight	lbs		1.3		
Temperature	°C		-55 to +85		
Vibration (Operating)	g, rms		19		
Shock	g, ms		150, 11		
Operating Life	yrs		20		
MTBF	hrs		>25,000		
Dormancy	yrs		20		

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