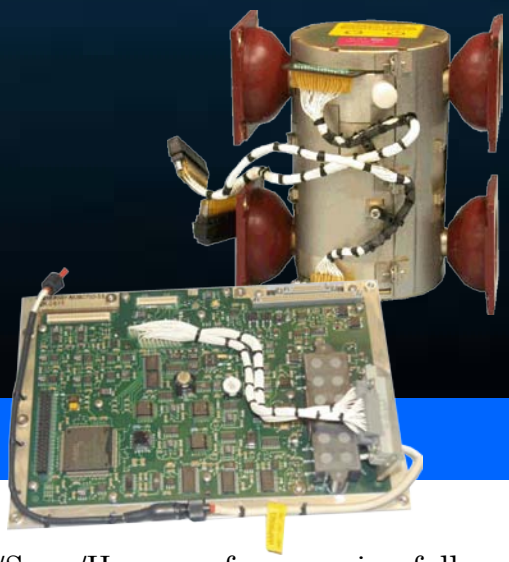
Kearfott Corporation
A Subsidiary of Astronautics Corporation of America
Guidance & Navigation Division

KI-4922S



KI-4922S SEANAV INS/IMU Kit

The KI-4922S SEANAV INS/IMU Kit with improved Serge/Sway/Heave performance is a fully qualified sea inertial navigator that is based on Kearfott's Monolithic Ring Laser Gyros(MRLG) The SEANAV INS/IMU Kit modular architecture allows for various onboard aiding devices such as GPS, Doppler Velocity Log, Speed Log, Screwspeed, Depth Sensor, Speed of Sound Sensor and position inputs.

Typical applications include the navigation of Autonomous Underwater Vehicles (AUVs) Surface Unmanned Vehicles (SUVs) and Remotely Operated Vehicles (ROVs) also 3D Sonar and platform stabilization.

KI-4922S SEANAV Kit
Main Features and Capabilities:

- Aiding Inputs:
  - GPS (Military or NMEA)
  - Doppler Velocity Log (DVL)
  - Speed Log (EM LOG)
  - Depth Sensor
  - Position Inputs
- Navigation Outputs:
  - Position (Hybrid INS/GPS/DVL)
  - Altitude (Hybrid INS/GPS/DVL)
  - Ground Speed
  - True Heading
- Stabilization Control Outputs:
  - Angular rates ($\Delta\theta$)
  - Linear Accelerations (Δv)
  - Pitch and Roll
- Communication Interfaces:
  - Multiple RS-422 Channels
  - Multiple RS-232 Channels

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KI-4922S

KI-4922S SEANAV INS/IMU Kit with Improved Serge/Sway/Heave Characteristics

KI-4922S SEANAV KIT PERFORMANCE* SURFACE SHIP	KI-4922S (T16 MRLG)
Position Accuracy • GPS/Log** • Log (Only)	 10 m, CEP 10 nm/8hrs, TRMS
Heading Accuracy • GPS/Log** • Log (Only)	 <5.0 mils, rms 6.0* secant (LAT) mils, rms
Velocity Accuracy • GPS/Log** • Log (Only)	 0.05 m/sec, rms 0.5 m/sec, rms
Surge/Sway/Heave	5 cm or 5% of motion, rms
Roll/Pitch Accuracy	0.5 mils, rms
UNDERWATER VEHICLE* **	
Position Accuracy	0.5% Distance Traveled , CEP
Heading Accuracy	5.0 mils, rms
Roll/Pitch Accuracy	0.5 mils, rms

PERFORMANCE SUMMARY** PARAMETERS	GYRO	ACCELEROMETER
Random Walk	0.02°/√h	0.04 m/s/√h
Bias Repeatability	0.06°/h	200 μ*g*
Scale Factor Repeatability	75 PPM	350 PPM
Axis Alignment	20 arc-second	20 arc-second
Bias Stability	0.03°/h	50 μ*g*
Vibration Rectification	N/A	15 μ*g*/*g*^{2} typical

OPERATING RANGES*	
Acceleration	>30 *g*'s all axes
Attitude (all axes)	unlimited
Roll, Pitch and Azimuth Rate	>300°/s
Roll, Pitch and Azimuth Accelerations	>10,000°/s^2
Outputs, Digital	RS-422, RS-232, MIL-STD-1553
Cooling	Free convection
Environmental Requirements	Per MIL-E-5400
Temperature	-40°C to +55°C

PHYSICAL CHARACTERISTICS **	
Dimensions - ISA & IMU Electronics	ISA - 3.3" DIA. x 5.2" L (8.4 cm DIA x 13.2 cm L) CCA's – 8.0" x 5.0" x 0.7" (20.3 cm x 12.7 cm x 1.8 cm)
Weight - ISA & IMU Electronics	4.5 lb (2.5 lb ISA, <2.0 lb CCA's/Heatsink) 2.04 kg (1.1 kg ISA, <0.9 kg CCA's/Heatsink)
Power	+15 V, -15 V, +5 V, and < 17 Watts
Activation Time	< 5 s
Maintenance	BIT, 95% coverage
Calibration Interval	None

*Typical values are provided for illustration purposes and are tailorable for specific applications.

**Assumes GPS aiding. (Selective Availability off)

***Underwater vehicle performance assumes GPS aiding while aligning at surface and Sonar/Doppler aiding while under water.

This datasheet is for reference only, Specifications are subject to change

Please contact Kearfott Marketing for Inertial Navigation Systems (INS) and Inertial Measurement Units (IMU)

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