



MINIATURE INTEGRATED LAND NAVIGATION SYSTEM (MILNAV®)

The *Miniature Integrated Land Navigation System (MILNAV®)* is the latest addition to Kearfott's family of inertial quality pointing, survey and land navigation devices. The MILNAV® modular architecture provides maximum flexibility, offering selectable performance and future upgradability. Typical applications include: Mobile Howitzers, Main Battle Tanks, Mobile Launch Vehicles, Light Towed Howitzers, HMMV's and Light Armored Vehicles.

The MILNAV® system consists of the following Line Replaceable Units (LRU's) :



- **Vehicle Reference Unit (VRU)** - The “heart” of MILNAV®, the VRU contains a Monolithic Ring Laser Gyro (MRLG), three single-axis accelerometers and ancillary electronics. All navigation computations are performed within the VRU.
- **Vehicle Motion Sensor (VMS)** - A simple, low cost encoder with an RS-422 interface provides logic pulses proportional to vehicle drive wheel rotation. Operationally this input bounds the errors and provides input to the multi-state Kalman filter integral to the MILNAV® navigation solution.
- **Control/Display Unit (CDU)** - The man-machine interface is provided by a color liquid crystal display with soft keys. The menu driven display provides the operator with mode control and display of operational parameters. Position, velocity, heading, attitude, and other parameters, are available for either the commander, driver, or gunner, depending on menu and screen selected. Various CDU options are available.
- **GPS Receivers** - The MILNAV® system is designed to accommodate either an embedded or an external GPS receiver. Integrated systems presently available include:
 - GPS Embedded Module - C/A Code or P(Y) Code
 - Precision Lightweight GPS Receiver (PLGR) with differential capability - C/A, P(Y) Code or Defense Advanced GPS Receiver (DAGR) P(Y) Code
 - Selective Stand Alone GPS Receiver - C/A , P(Y) Code or differential

In addition to the capabilities and features described above, the integrated system provides the following functionality:

- Waypoint Navigation
- Optional Input/Output (MIL-STD-1553B, RS-422, RS-232)
- Multiple Output Formats (MGRS, UTM, Geodetic)
- “Align on the Move” Provides Continuously Accurate Heading

PERFORMANCE* INERTIAL / VMS ONLY	KN-4051	KN-4052	KN-4053
Position (Horizontal) CEP	< 1.0% distance traveled	< 0.35% distance traveled	<0.25% distance traveled
Heading (15 min. Stationary Align) PE	< 10.0 mils (up to 65° lat)	1.7 mils (up to 65° lat)	0.67 mils (up to 65° lat)
Altitude (Vertical Position) PE	< 0.125% distance traveled	0.1% distance traveled	0.067% distance traveled

PERFORMANCE* P(Y) GPS / INERTIAL / VMS	KN-4051G	KN-4052G	KN-4053G
Position (Horizontal) CEP	10 meters	10 meters	10 meters
Heading (15 min. Moving Align) PE	3.4 mils	1.0 mils	0.67 mils
Altitude (Vertical Position) PE	10 meters	10 meters	10 meters

OPERATING RANGES*	
Acceleration	30 g's all axes
Attitude (all axes)	Unlimited
Roll, Pitch and Azimuth Rate	>300°/second
Roll, Pitch and Azimuth Accelerations	>10,000°/second ²
Outputs, Digital	MIL-STD-1553B, RS-422, RS-232, RS-485
Cooling	Free convection
Environmental Requirements	Per MIL-D-70789 (AR)
Altitude	-1,000 to +11,336 meters
Temperature	-40°C to +55°C

VRU PHYSICAL CHARACTERISTICS	
Dimensions	7 x 7 x 11 inches
Weight (KN-4051G)	16 pounds
Weight (KN-4052G, KN-4053G)	<20 pounds
Power, running	30 Watts (from 28 V dc)
Maintenance	2 level BIT No special equipment required
Calibration Interval	None

GPS PARAMETER	DAGR	GPS (Embedded Module)
GPS Service	Precision Positioning Service (PPS)	Standard Positioning Service (SPS)
Operating Frequency	L1/L2	L1
Channels	12	12

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

For further information regarding MILNAV® or any other of our products or applications please contact Kearfott Marketing: Telephone (973) 785-6555 or Fax (973) 785-5905

Visit our website: www.kearfott.com