



## KN-4073C Lightweight Airborne INS/GPS

KN-4073C was designed as a small and lightweight Navigation System for the Unmanned Air Vehicles (UAV) and unmanned helicopters market. It weighs 8 lb. (3.7 Kg).

Featuring Kearfott's T-16B Monolithic Ring Laser Gyro (MRLG) and accelerometer triad the KN-4073C inertial sensors are tightly coupled with an embedded SAASM P(Y) Code GPS to give best performance in its class. An example customer is the MQ-8B/C Fire Scout VTUAV which uses two KN-4073C's as its prime navigators and inputs providers to the flight control system.

### KN-4073C Main Features and Capabilities:

- SAASM P(Y) and C/A Code GPS
- C/A Code DGPS Corrections (requires DGPS receiver)
- Inputs:
  - Air Data: Baro Altitude & True Air Speed (Optional)
- Navigation Outputs:
  - Position and Altitude
  - Geographic Velocities
  - True Heading, Roll and Pitch
  - Magnetic Heading
  - Wind Speed (subject to the availability of Air Data)
- Flight Control Outputs:
  - Angular rates ( $\Delta\theta$ )
  - Linear Accelerations ( $\Delta v$ )
- Communication Interfaces:
  - MIL-STD-1553B (Muxbus), RS-422 and RS-232
- Recalibration NOT required

### Navigation Performance\*

	P(Y) GPS	With C/A DGPS
Position Accuracy (CEP)	2 m (6.4 ft)	1 m (3.2 ft)
Altitude Accuracy (1 $\sigma$ )	4 m (13 ft)	2 m (6.4 ft)
Heading Accuracy (1 $\sigma$ )	1 mrad	1 mrad
Pitch/Roll Accuracy (1 $\sigma$ )	0.5 mrad	0.5 mrad
Velocity Accuracy (1 $\sigma$ ), each axis	0.05 m/s (0.2 ft/s)	0.05 m/s (0.2 ft/s)

\* Performance may vary according to application

## KN-4073C System Characteristics

Modes of Operation:	<ul style="list-style-type: none"> <li>• <b>Hybrid INS/GPS Navigation:</b> <ul style="list-style-type: none"> <li>– GPS Data is Tightly Coupled with Inertial Measurements</li> <li>– When keyed GPS operates in P(Y) Code and when not keyed operates in C/A Code</li> <li>– DGPS Corrections are applied when available from an external DGPS Receiver (via RTCM-104)</li> <li>– Wind Speed (Horizontal) is calculated when TAS is available</li> </ul> </li> <li>• <b>Free Inertial:</b> <ul style="list-style-type: none"> <li>– Baro Altitude is incorporated in the Vertical Loop in absence of valid GPS data and True Air Speed may be used</li> </ul> </li> <li>• <b>Aided navigation</b> <ul style="list-style-type: none"> <li>– External Data (Position, etc.) can be used to aid Navigation</li> </ul> </li> <li>• <b>Alignment:</b> <ul style="list-style-type: none"> <li>– Ground Alignment (Self Gyro Compassing)</li> <li>– In-Air and Shipboard Initialization</li> </ul> </li> </ul>
Embedded GPS:	<ul style="list-style-type: none"> <li>• SAASM 24 Channels P(Y) Code Receiver, all in view</li> <li>• Time Mark: 1 PPS (UTC), 2 signals</li> <li>• Keys Zeroize Command: External Discrete and I/O Message</li> <li>• Supports 5 VDC Active GPS Antenna</li> </ul>
Operating Range:	<ul style="list-style-type: none"> <li>• Attitude: Unlimited</li> <li>• Angular Rate: Up to 400 deg/sec. (all axis)</li> <li>• Acceleration: Up to 30g's (all axis), IMU</li> </ul>
Environmental:	<ul style="list-style-type: none"> <li>• Temperature : -45°C to +71°C</li> <li>• EMI/RFI: per MIL-STD-461E</li> <li>• Shock and Vibration: per MIL-STD-810E/F</li> </ul>
Data Communication:	<ul style="list-style-type: none"> <li>• MIL-STD-1553B Muxbus: 1 Dual Redundant RT Channel</li> <li>• RS-422: 2 Channels</li> <li>• RS-232: 1 Channel</li> </ul>
Power:	28 VDC per MIL-STD-704
Cooling:	Free Convection
Weight:	8 lb. (3.7 Kg)
Dimensions:	9.1 (L) x 5.4 (W) x 6.0" (H) (231 x 137 x 152 mm)

Note: The KN-4073C INS/GPS has been granted the NAVSTAR Global Positioning System Joint Program Office Security Approval

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

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