



**DQI-NP**  
Digital Quartz Inertial  
Measurement Unit with  
Navigation Processor

**Next-Generation, Low-Cost, Externally Aided  
Inertial Navigation System (INS) Technology**

**DQI-NP** is a unique guidance, navigation & control (GN&C) product that exploits the BEI Systron Donner Inertial Division (BEI-SDID) leading-edge solid-state DQI technology. DQI-NP features dual tuning fork quartz rate sensors and vibrating quartz accelerometers, also in a dual-beam configuration. The inertial sensor assembly is combined with digital, miniaturized electronics, and features digitized outputs -- all using BEI-SDID's proprietary signal-processing techniques.

The DQI processor hosts the MIGITS INS/GPS software, while addition of a navigation processor adapter (NPA) allows the unit to interface with an external GPS receiver. This allows the user to employ any GPS receiver that conforms to the standard DQI-NP receiver protocols.

**Diverse applications**

DQI-NP provides next-generation, low-cost INS/GPS technology for:

- Unmanned aerial vehicles
- Ease of integration with stand-alone GPS receivers
- Land navigation
- Commercial/General Aviation

**Versatile Design Grows with Your GN&C Needs**

Another revolutionary DQI-NP feature, Kalman filter software processing and interface circuitry are added with the Navigation Processor feature. This lets you integrate the IMU directly to an external GPS receiver, and easily adapt DQI-NP to upgraded GPS receivers as they become available. Plus, DQI-NP is fully adaptable to a wide range of system architectures, at very low cost.

## DQI-NP Innovations at a Glance

- Solid-state inertial measurement unit offers superior reliability
- Low-cost micromachined inertial sensors
- Compact, lightweight design
- Hermetically sealed IMU for long life
- Integrates with GPS receivers; will easily adapt to future upgraded GPS receivers
- Loosely coupled (PPS) or tightly coupled (SPS) INS/GPS solution. INS compensates for GPS-coverage gaps
- PLGR (Precision Lightweight GPS Receiver) compatible

Physical Characteristics		
Size (Vol.)	43.2 in <sup>3</sup> (3.189"W x 3.53"D x 3.84"H) (81mm x 90mm x 98mm)	
Weight	2.2 lbs. (1.0 kg)	
Power	28 VDC at 17 watts	
I/O	AMRAAM serial data	
Reliability @ 35°C	62,267 hr MTBF, ground; 12,791 hr MTBF, missile	
System Performance		
	Gyro	Accelerometer
Bias Repeatability	20 deg/hr (1 sigma)	1.5 mg (1 sigma)
In-Run Stability	3 deg/hr (1 sigma)	200 µg (1 sigma)
Scale Factor	350 ppm (1 sigma)	350 ppm (1 sigma)
Random Walk	0.035 deg/sqrt(hr)	200 µg/sqrt(hz)
Non-orthogonality	0.5 mrad (1 sigma)	0.5 mrad (1 sigma)
Environmental		
Temperature Range	-54° to +71°C (operating)	
Vibration	12-19 grms (performance-endurance)	
Shock (Survive)	150 g, 11 ms	
Operating Range	±1000 deg/s*; ±70g **	
*Angular Rate **Acceleration		

For more information contact:  
[sales@systron.com](mailto:sales@systron.com)  
**Systron Donner Inertial Division**  
 2700 Systron Drive  
 Concord, California 94518  
 (866) BEI-GYRO (866-234-4976)

In Europe:  
[systron@easynet.co.uk](mailto:systron@easynet.co.uk)  
**Systron Donner Inertial Division**  
 Ashford, Kent England  
 Tel: ++44 (0) 1303-812778  
 Fax: ++44 (0) 1303-812708