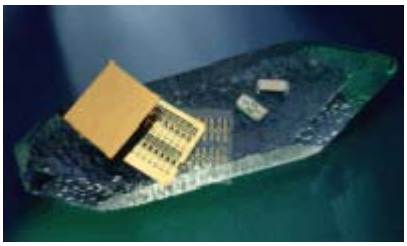
ISO 9001 QS-9000 CERTIFIED

BEI SYSTRON DONNER INERTIAL DIVISION
BEI TECHNOLOGIES, INC.



DQI

Digital Quartz IMU
(Inertial Measurement Unit)

High-Performance, Low-Cost INS Technology

The **DQI**, or Digital Quartz IMU (Inertial Measurement Unit), is a powerful component of BEI Systron Donner Inertial Division's technology solutions - offering "Six Degrees of Freedom" measurements for guidance, navigation and control applications.

The package includes solid-state quartz micromachined electromechanical system (MEMS) inertial sensors. By combining batch fabrication with the stability of high-speed digital processing, DQI offers significantly improved IMU performance, adaptability to a wide variety of tactical vehicle and weapon applications at affordable cost. Built on GyroChip® Technology.

Diverse applications

DQI provides state-of-the-art guidance, navigation and control for:

- Tactical missiles
- Precision guided munitions
- Unmanned vehicles
- Land vehicles
- Avionic systems
- Range instrumentation systems

Uniquely Digitized Mechanization

DQI technology is the first of its kind, featuring a dual tuning fork quartz rate sensor and a vibrating quartz accelerometer with a differential, double-ended tuning fork sensor configuration. Hermetically sealed in a laser-welded cube, this technology forms an inertial sensor assembly with digitized outputs, developed with unique electronics and signal-processing techniques. The digital mechanization greatly improves performance by reducing temperature sensitivity.

DQI Innovations at a Glance

- All solid-state inertial measurement unit
- Micromachined inertial sensors
- Compact and lightweight
- Durable design for high-vibration environment
- Very low noise output
- Delta Theta, Delta V output at 100 Hz
- Linear acceleration; angular rates at 600 Hz
- Easily interfaces with AMRAAM data protocol

Physical Characteristics	
Size (Vol.)	43.2 in^3 (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	10 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
Systron Donner Inertial Division
2700 Systron Drive
Concord, California 94518
(866) BEI-GYRO (866) 234-4976

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

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