

## INTEGRATED NAVIGATION SYSTEM

### HIGH PRECISION, FPGA BASED INERTIAL NAVIGATION SYSTEM



#### DESCRIPTION

The Integrated Navigation System is a complete navigation solution that combines measurements from an inertial measurement unit, a magnetic compass, and a GPS receiver in a real-time navigation algorithm to provide position, speed and attitude information. The system is specifically designed to operate in the harsh aeronautical environment.

The inertial measurement unit is thermally stabilized and provides accelerometer and gyroscopic digital data on all three axis.

The system has flown over two years in CoNAE's airborne L-band synthetic aperture radar (SARAT).

#### APPLICATIONS

- Inertial measurement and navigation for airborne sensors:
  - Synthetic aperture radar,
  - Lidar,
  - Optical cameras.
- Platform stabilization.

#### FEATURES

- 10 Hz attitude data rate.
- 100 Hz raw inertial measurement rate.
- Inertial measurements dynamic range:
  - Gx, Gy 30 °/s
  - Gz 15 °/s
  - Ax 0.5 g
  - Ay 1.5 g
  - Az 3 g
- 16 bit resolution inertial measurement samples.
- ±0.1 °C thermal control stability.
- Web browser user interface.
- Linux based operating system.
- Solid state storage capacity for +5 hours.
- Raw data output via UDP.
- Power requirements 5 A @ 28 V.
- 0 °C to 50 °C operating temperature range.
- Dimensions (WxHxD) 32 cm x 16 cm x 15 cm.
- Weight 3.5 kg approx.
- 12 channel GPS receiver.
- 10 Hz GPS update rate.
- GPS synchronized pulse per second output .
- NMEA & binary messages.
- 3 axis magnetic compass.
- Status & diagnose front panel LEDs
- Rugged electrical connectors.

#### SYSTEM BLOCK DIAGRAM

