LAND NAVIGATION SOLUTION

Strapdown Inertial Navigation System NAV9
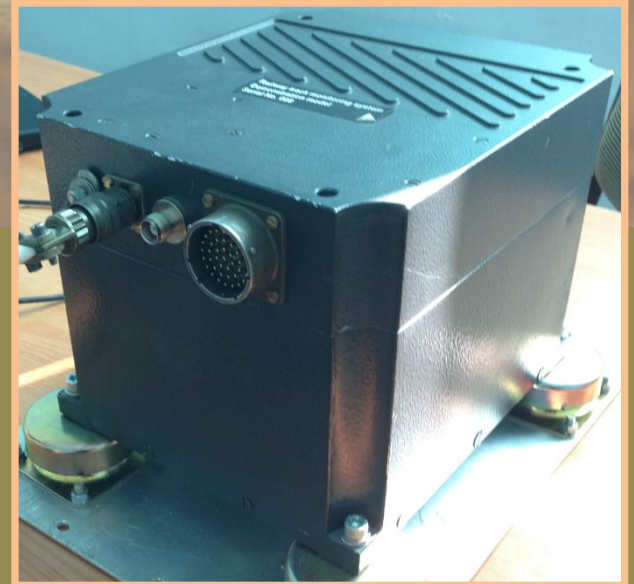
Performance

Without GPS:	
• Position, horizontal/vertical:	0.2% DT/0.15% DT
• Heading Stability (RMS):	0.5 mils/hr
• Roll, pitch (elevation):	<1.0 mils RMS
• Heading/Pointing Accuracy (azimuth):	<2.0 mils RMS
Hybrid modes (horizontal/vertical position):	
• INU, VMS, GPS SPS	0.10% of DT PE
• INU, VMS, GPS PPS	10m CEP/12m PE

Characteristics

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General:	• Attitude: Alignment and orientation in any direction • Hard mounted • Angular Rate: 300 deg/sec • MTBF: > 50000 hours
Power requirements:	• Power supply: 27 VDC, • Consumption: < 30 W
Interfaces:	• RS 422/232, CAN, Ethernet • Optional: additional RS-422/RS-232 •Data rate: as per customer requirement
Overall Features:	• Size: 151 mm x 173 mm x 210 mm • Weight: < 5 kg • No cooling required: -50°C to +71°C

LG Performance Specifications

Input Rate Range	$\pm$ 360 °/s
Bias	$\leq$ 0.8 °/hr
Bias Stability	0.03 °/hr
Bias Temperature Coefficient	0.001...0.003 (°/hr)/°C typical; 0.01(°/hr)/°C maximum
Angular Random Walk	0.003 °/$\sqrt{\text{hr}}$
Scale Factor	558140$\pm$990 pulses/revolution
Scale Factor Stability	20 ppm 1 sigma
Scale Factor Linearity	20 ppm 1 sigma
Scale Factor Asymmetry	10 ppm
Sensitive Axis Misalignment Stability	$\pm$10 arc sec.
Start Time (Warm-up time)	10 seconds maximum

Quartz accelerometer VQ-3

- Acceleration range: ±50g
- Scale factor (SF): 1.35±0.13mA/g
- SF stability: <100ppm
- SF temperature sensitivity: ±150ppm/deg
- SF nonlinearity: 15ug/g2
- SF temperature hysteresis: ±50ppm
- Bias (at normal conditions): ±6000ug
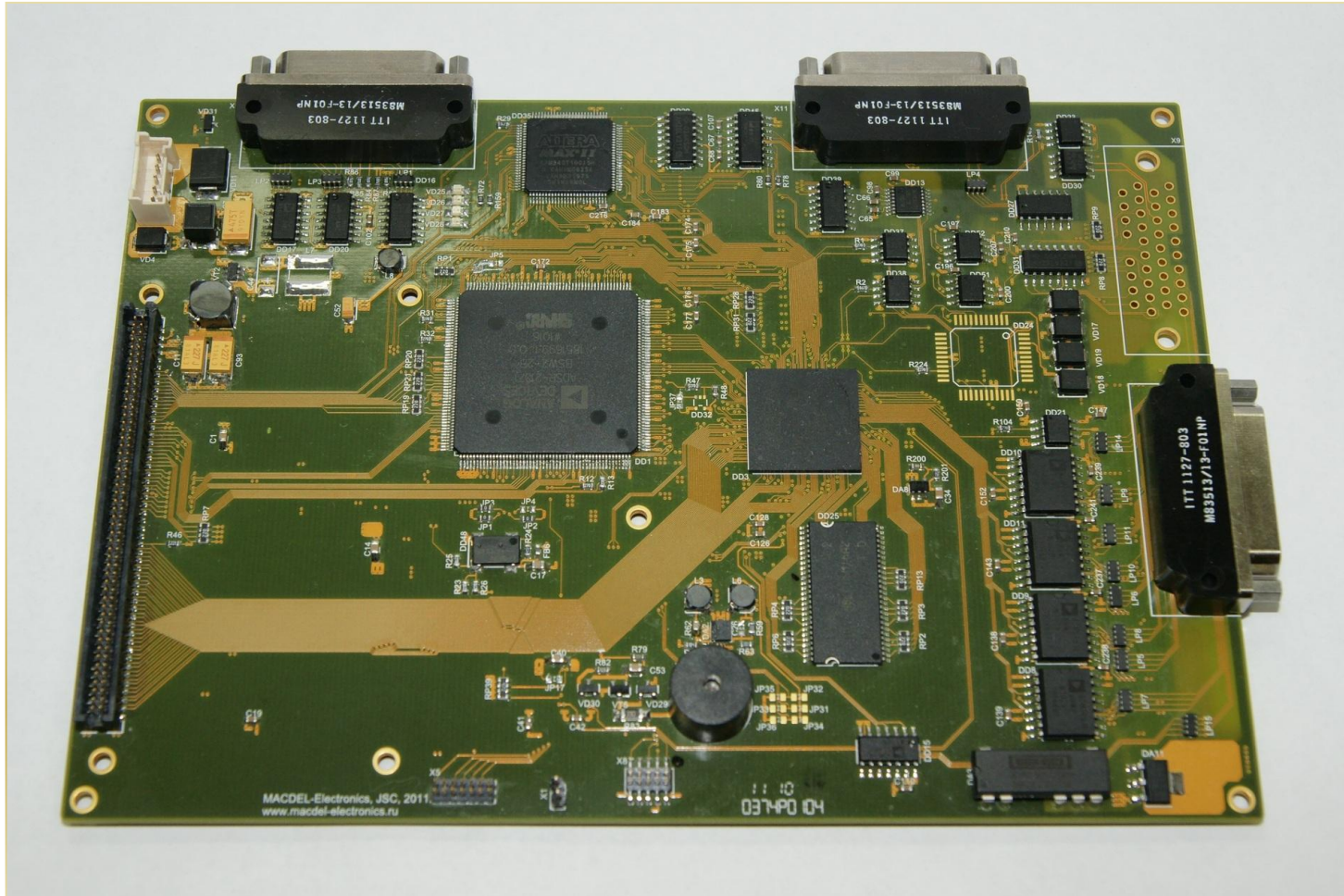- Short term bias stability: 0.6ug (in lower dynamic range)
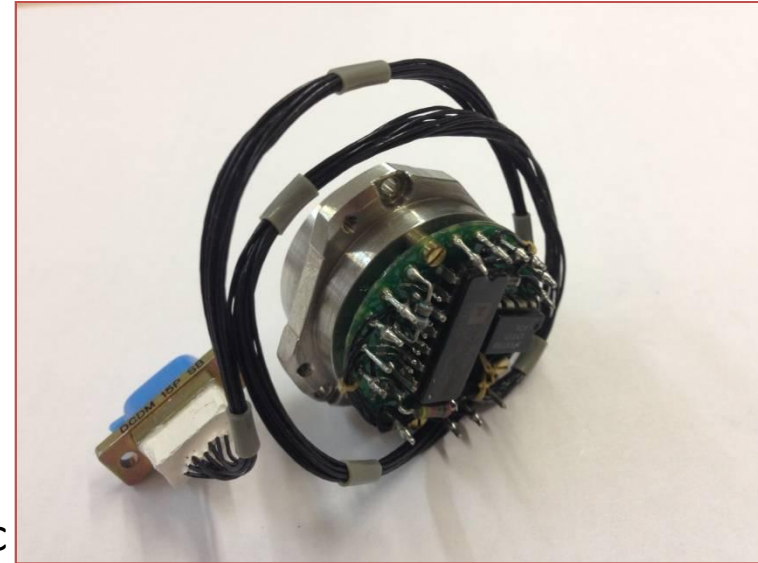
Digitizer board
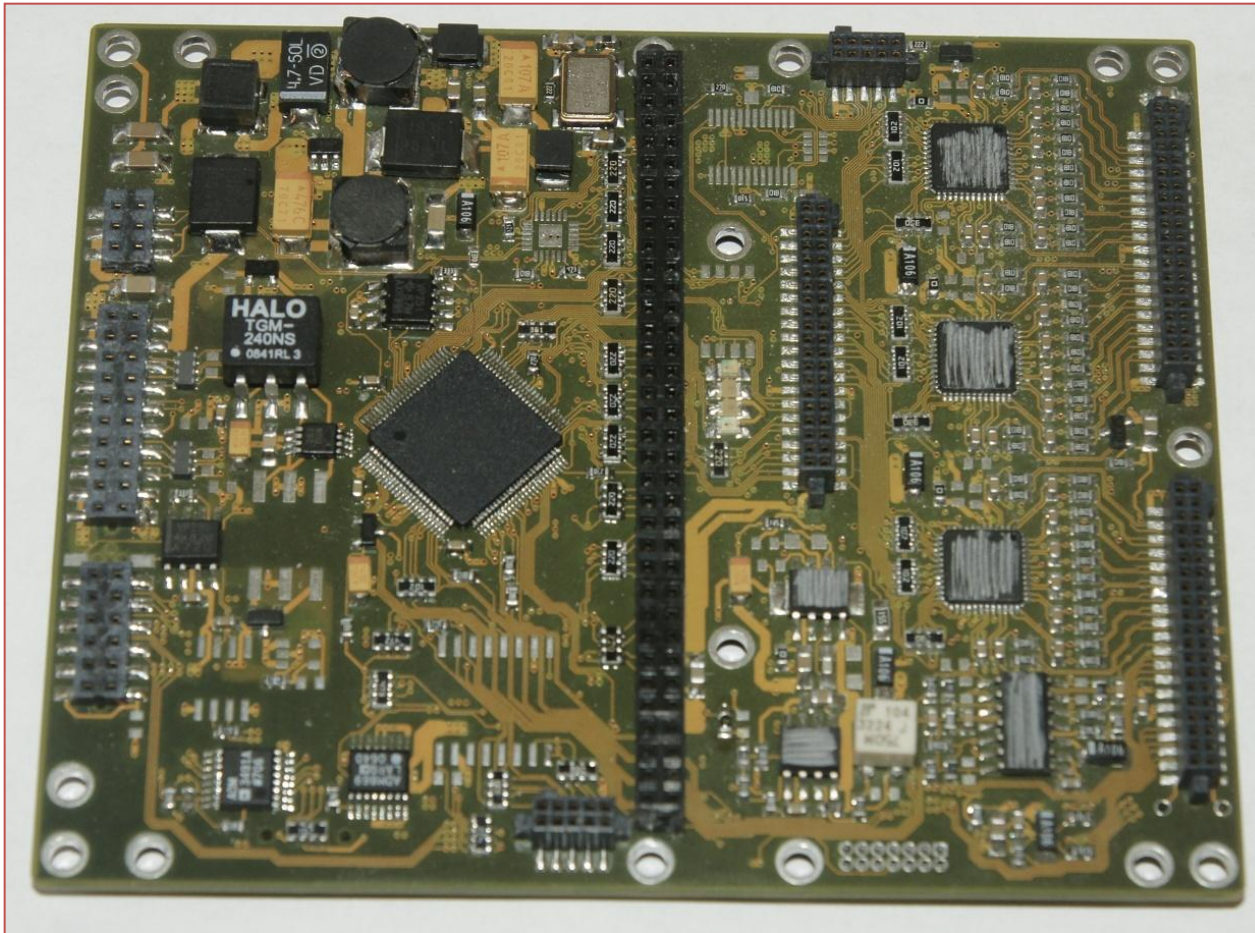
3-channel, 24-bit digitizer with 1ppm bias stability in -40…+80deg temperature range.

SHARC II
Navigation Processing Module

SHARC Specification

System	
DSP	Analog Devices SHARC ADSP-21371 @ 333 MHz
External RAM (on board)	SDRAM 8 Mbytes
Flash ROM	4 Mbytes
FPGA	Altera FPGA Cyclone EP3C10F256I7
JTAG	Analog Devices JTAG connector, Altera FPGA JTAG connector for debugging, diagnostics and manufacturing
Interfaces	
2 SHARC on-chip UART, RS-422	For servicing (user software, FPGA project update) and debugging
5 FPGA UART, RS-422	For internal connections to sensors, up to 921600 baud
1 FPGA UART, RS-232	For internal connection to GPS/GLONASS, up to 115200 baud
8 FPGA UART, RS-422, galvanic isolated	For external connections to customer equipment, up to 921600 baud
1 FPGA UART, RS-232, galvanic isolated	For external connections to customer equipment, up to 115200 baud
I/o logical signals	For synchronization, status and control
Expansion connector	For optional interfaces to FPGA
Power, environmental and mechanical	
Power Supply	+12 V, 300 mA … +24 V, 150 mA (3.6 W)
Temp. range	-40 °C...+85 °C
Dimensions	125 x 175 mm