

Technical Specifications

Performance

| | |
|--------------------------------|------|
| Update rate (Hz) | 60 |
| Start-up time valid data (sec) | < 15 |

Attitude

| | |
|----------------------|---------------------------|
| Roll range (°) | ±180 |
| Pitch range (°) | ±90 |
| Resolution (°) | 0.01 |
| Static accuracy (°) | < 0.8 (3σ) |
| Dynamic accuracy (°) | < 1.5 (1σ) Note * Note*** |

Heading

| | |
|----------------------|----------------|
| Range (°) | ±180 |
| Resolution (°) | 0.01 |
| Static accuracy (°) | < 2.5 Note** |
| Dynamic accuracy (°) | < Note* Note** |

Rate Sensors

| | |
|-------------------------------|----------------------------------|
| Range (°/sec) | 350 |
| Resolution (°/sec) | 0.03 |
| Bandwidth (Hz) | 20 |
| Angular Random Walk (°/rt Hr) | < 0.5 Allan Variance |
| Long Term Bias (°/hr) | < 5 |
| G sensitivity | almost not measurable up to 4G's |

Acceleration Sensors

| | |
|-----------------|--------------|
| Range (G) | -1.7 to +1.7 |
| Resolution (mG) | 0.4 |
| Bandwidth (Hz) | 10 |

Magnetics

| | |
|-----------------|--------------|
| Range (Gaus) | -0.8 to +0.8 |
| Resolution (nT) | 30 |
| Bandwidth (Hz) | 10 |

Environment

| | |
|--|------------------------|
| Standard Operating temperature (°C) | -20 to +70 |
| Compensated temp range (°C) | 0 to +50 or -20 to +70 |
| Non operating temp (°C) | -40 to + 85 |
| Extended Operating Temperature and Compensation as an Option | |

Electrical

| | |
|---------------------|------------------------------------|
| Input Voltage (Vdc) | 7 to 18 |
| Power (W) | < 3.5 |
| Load Dump | Protected |
| Communications | RS232 / RS422 selectable |
| Connector | Miniature Sub D9 with mating cable |

Physical

| | |
|-------------|---------------|
| Size (mm) | 104 x 55 x 25 |
| Weight (gr) | < 140 |

Processing Performance

| | |
|-------------------|----------------------|
| Processor | 32 bit DSP @ 150 MHz |
| Kalman processing | 60Hz |
| Data update rate | 60Hz |

Serial Communications Standard Data Format

| | |
|------------------|---------------------------------------|
| Port | RS 232 / RS 422 115200 Bd |
| VG Data format | Roll, Pitch, Rate of Turn, Slip, mG's |
| AHRS Data format | VG + Yaw |

Serial Communications Sensor Data Format

| | |
|------------------------|---|
| Port | RS232 / RS 422 115200 Bd |
| Calibrated Data format | p, q, r, Ax, Ay, Az, Bx, By, Bz, Tp, Tq, Tr |

Note * Normal flight and standard 360's, No Aerobatics No sustained 360's
 Note ** Depending on the quality of Hard Iron Calibration and constant magnetic environment of the vehicle
 Note*** Expected < 1 (1σ)



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NANO Vertical Gyro and VG based AHRS



Features

- 300 Hz gyro sampling
- Mathematics based on VG algorithm
- Magnetic Slaved Gyro Compass
- Roll, Pitch and Heading Angles in Dynamic Environments
- On Board DSP Processing
- Proprietary Kalman Filter Algorithm
- High Performance to Cost Ratio MEMS
- Temperature compensated
- Body axis can be software redefined for Horizontal and Vertical Mounting.
- Available Q2 2009

Applications

- UAVs
- Platform Stabilization
- Automotive applications
- Off Road Vehicles Stabilization
- Sports Aircraft
- Towed Array Marine applications
- Experimental Aircraft
- Under Water Vehicles
- Vehicle Behavior Measurement
- High Speed Train cabin stabilization
- Terrain Survey applications
- Robotics

Attitude is not influenced by heavily disturbed magnetic fields

The **NANO Vertical Gyro and VG based AHRS** is a reference system with remarkable price/performance relationship. The **NANO** is a solid-state six-degree-of-freedom (6DOF) unit intended for a multiple of applications, available in small quantities and OEM quantities. It can be used for Control, dynamics testing and instrumentation applications.