# ARDICLABS
## integrated sensing solutions

**High Performance Navigation Systems**

# ArNav S Series

## Navigation Systems for Drones, Land Vehicles and All Autonomous Systems

## KEY FEATURES

- GNSS/INS with size 33mm x 33mm x 15.8mm
- Robust MEMS technology
- Easy integration and use
- Cost effective AHRS, GNSS/INS and RTK
- Multi Constellation GNSS receiver
- Appropriate for drones, smart systems, robotics and UAV applications

**ArNav S** series is a class of MEMS based systems with low cost, miniaturized form and high accuracy. The ArNav S series is the entry level of the ArNav product family with 3 different products. The products offer different functions with different levels of filtering. Arnav S series consists of AHRS (ArNav S1A), GNSS/INS (ArNav S1G) and GNSS/INS with real-time kinematic capability (ArNav S1GR).

**ArNav** series employing sophisticated calibration techniques and filtering algorithms, provides driftless and real-time navigation information over a wide range of temperature in dynamic and static conditions. Attitude Heading Reference Systems fuse accelerometer, gyroscope and magnetometer to provide accurate roll, pitch and yaw in an optimal way. GNSS/INS systems yield optimal position, velocity and attitude data even in high dynamic conditions.

### Onboard Sensor Calibration
Highly sophisticated filters running on the system continously estimate the errors of inertial sensors in an optimal manner to output highly accurate navigation solutions.

### Magnetometer Calibration
Easy to use hard-iron and soft-iron calibration procedure for magnetometers.

### Multi-Measurements
Various type of measurements may be switched on or off with respect to the needs of applications.

### Multi-band GNSS
GNSS/INS with 184 channels (L1C/A, L1OF, E1, B1I,L2C, L2OF, E5b, B2I) and various constellations (GPS, GLONASS, Galileo,BeiDou, QZSS, SBAS)

### Easy to Use
Hex and binary messages. Arview User Interface.

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| Capabilities | M2G | M2GR | M2D |
|---|:---:|:---:|:---:|
| Inertial Measurement | ✓ | ✓ | ✓ |
| Magnetic Heading | ✓ | ✓ | ✓ |
| Attitude | ✓ | ✓ | ✓ |
| Pressure Altitude | | ✓ | ✓ |
| Position & Velocity | | ✓ | ✓ |
| Real Time Kinematic | | | ✓ |

| Performance | S1 Series |
|---|:---:|
| Accelerometer Full Range | ±6 g |
| Gyroscope Full Range | ±250°/sec |
| Output Update Rate | 100 Hz |
| Roll, Pitch Accuracy | 0.2° |
| Heading Accuracy (GNSS) & Dynamic) | 0.4° |
| Heading Accuracy (Magnetometer) | 1° |
| Pressure Altitude Accuracy | < 10m (with baro setting) |
| Position Accuracy (Horizontal-Vertical) | 2.0 m –2.5 m |
| Position Accuracy (with L1 RTK) | 10 cm –15 cm |
| Velocity Accuracy | 0.05 m/s |
| Velocity Accuracy (with L1 RTK) | 0.01 m/s |

| | Gyroscope | Accelerometer |
|---|:---:|:---:|
| Dynamic range | ±250 °/s | ±6 g |
| Bias repeatibility | 1°/s | 20 mg |
| Bias stability | 0.015°/s/°C | 0.2 mg/°C µg |
| Noise density | 0.014 °/s/√Hz | 80 µg/√Hz |
| Alignment error | 10 mrad | 8 mrad |
| Bandwidth | 47 Hz | 40 Hz |

| Mechanical & Electrical | S1 Series |
|---|:---:|
| Size(mm) | 33 x 33 x 15.75 |
| Weight | < 40 g |
| Data & Power Connector | Harting har-flex 16 pin |
| GNSS RF Connector | MMCX |
| Interface | RS232 & RS422 (optional TTL, CAN ) |
| Input Voltage | 5V to 36V |
| Power Consumption | < 0.75 W |
| Operating Temperature | –40°C to +85°C |

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**www.ardiclabs.com**