

## What is Attitude and Heading Reference System ?

**Attitude and Heading Reference System (AHRS in brief)** consists of sensors on three axes that provide attitude information for aircraft, including roll, pitch and yaw. It is composed of micro-electro-mechanical systems (MEMS) gyroscopes, accelerometers and magnetometers. They are designed to replace traditional mechanical gyroscopic flight instruments. AHRS have proven themselves to be highly reliable and are in common use in commercial and business aircraft.

The key difference between an inertial measurement unit (IMU) and an AHRS is the addition of an on-board processing system in an AHRS which provides attitude and heading information versus an IMU which just delivers sensor data to an additional device that computes attitude and heading.

SkyMEMS Attitude and Heading Reference System (AHRS) is a high performance inertial measurement system, it can measure 3-axis attitude angles (yaw, pitch, roll) for the strap-down carrier. No matter the carrier is moving or static, AHRS1000 can work stably and provide highly precise attitude angles. Each X, Y, Z axis of AHRS is composed of one accelerometer, one gyro, one magnetic sensor. the gyro can provide the accurate 3-axis angular rate, the accurate 3-axis attitude angles can be calculated according to strap-down algorithm, the magnetic sensor and accelerometer can amend the attitude angles continuously, it can realize dynamic error compensation through Kalman filter and complementary filter methods.

In full temperature range (-45°C~+85°C), it adopts digital signal processor (DSP) to adjust, compensate (zero position, installation error), layout of strap-down navigation system and attitude angle calculation, etc.

The system enjoys small size, light weight, it is widely applied in movement control system, stability and control for aircraft, ship and vehicle, inertial navigation and guidance, etc.

We will continue to provide the best solution through development of the compact, low-voltage and high-performance AHRS to our customers in the future.

### Applications of MEMS gyro sensor

SkyMEMS Attitude and Heading Reference System is a high performance inertial MEMS sensors, which has been widely used in the following fields:

- Target Drone
- Unmanned Aircraft