Galaxy Navigation Corp.

AHRS-200A®

AHRS-200A® is a high precision strip-down AHRS system with which combines ultra-low noise crystal 3-axis gyroscopes, MEMS 3-axis accelerometer, 3-axis magnetometer, barometer, high speed MCU and new generation GNSS module in a single, compact board. All sensors are calibrated over their temperature、bias、scale factor、axis alignment and g-sensitivity in order to make them ideal for the best applications.

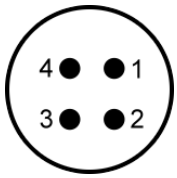
While moving and when encountering magnetic distortion, **AHRS-200A®** employs a patented Kalman filtering algorithm that intelligently fuses with gyros and accelerometers to overcome errors due to erratic motion and changes in the local magnetic field to generate optimal Attitude and Heading data outputs.

Application：

- Stabilization platform control
- Aviation control system (UAV, Fixed wing, Rotor, etc)
- Ground vehicle control
- Underwater vehicle control
- Autonomous vehicle
- Robots

Feature：

- Suitable for primary attitude reference
- All solid state components (no moving parts)
- All sensors have temperature、bias、scale factor、axis alignment calibration
- Auto self-calibrate attitude when system fixed and power on
- Enable 1° to 2° compass heading accuracy
- 0.3° heading accuracy with GNSS aided
- Dynamic heading accuracy 1.0° (RMS)
- Overcome errors due to erratic motion and changes in the local magnetic field
- 24-bit ADC digital pressure sensor
- Environmentally sealed (waterproof)
- Small size, light weight and compact design
- Low power consumption
- High CP value



1. Power in
2. Rx
3. Tx
4. Ground





Specification

Gyroscope		
Angular rate (3-axis)		±300°/s
Noise density		0.004°/s/√Hz
Non linearity(Full Scale)		±0.5%
Accelerometer		
Acceleration (3-axis)		±3 g
Noise density		100 μg/√Hz
Non linearity(Full Scale)		±0.5%
Magnetometer		
Magnetic field range (3-axis)		± 8 Gauss
Linearity		± 0.1% of full scale
Field resolution		2 mGauss
Barometer		
Pressure range	300~1,200mbar(9,500m~ -500m)	
Resolution	Pressure	0.02 mbar
	Temperature	0.01°C
Relative accuracy(700~1000 mbar)		±0.1 mbar
Long term stability		± 1 mbar/year
Heading		
Range		0~360°
Static accuracy		0.5°
Dynamic accuracy (RMS		1.0°
Resolution		0.05°
Magnetic heading		1.0°~2.0°
GNSS aided heading		0.3°
Attitude		
Range (Pitch/Roll)		±90°/ ±180°
Static accuracy		0.3°
Dynamic accuracy (RMS)		0.5°
Resolution		0.05°
Update rate		
AHRS		10 Hz (default)
Navigation		5 Hz
Power		
Prime power		5±5% VDC
Antenna		3.3 VDC
Power consumption		< 0.5 W
Interface and Connector		
Interface		UART, RS-232
Data connector		O-type 4-pin
Antenna		SMA female
Baud rate 4,800~115,200 bps (default 115,200 bps)		
GNSS receiver		
Channels		72
GPS, SBAS, QZSS,		L1, C/A
BeiDou		B1
GLONASS		L1, OF
Galileo		E1B/C
Protocols	NMEA 0813,	Version 4.0
Tracking		
● GPS/GLONASS		–164 dBm
● GPS/BeiDou		–162 dBm
● GPS		–163 dBm
Accuracy		
● Horizontal position accuracy		
Autonomous (50% @ 30 m/s)		2.5 m
● Velocity		0.05 m/s
● 1 PPS		30 ns (RMS)
Time-to-first-fix (TTFF)		
● Hot start		< 1 s
● Cold start		
★ GPS/GLONASS		27 sec
★ GPS/BeiDou		28 sec
★ GPS		30 sec
Dynamics		
Acceleration		≤4g
Velocity		500 m/s
Altitude limit		18,000 m
Environment		
Compensated temperature		– 10°C to +70°C
Operating temperature		– 40°C to +85°C
Vibration		4 g, RMS (20~2000 Hz)
Shock		40 g, 11 ms 1/2 sine wave
Environmentally sealed		IP67
Physical		
Dimensions		50 x 50 x 22 mm
Weight		<40 grams
Enclosure		Aluminum alloy