



INC100/101

Dynamic Inclination Measurement Module

The INC100/101 is a dynamic tilt measurement sensor based on an industrial-grade IMU platform, designed for applications in fields such as construction machinery and intelligent robotics. Before leaving the factory, all modules are configured with fine-tuned temperature compensation over an ultra-wide temperature range and independently calibrated to ensure consistency and stability. It features a built-in attitude fusion algorithm based on an Extended Kalman Filter, which effectively suppresses the impact of dynamic interference on attitude accuracy, ensuring stable attitude precision.



- **Military-Grade MEMS IMU**
 - 2.5°/h gyroscope bias instability
 - 25 μ g accelerometer bias instability
- **Anti-Interference Dynamic Tilt Algorithm**
 - Resolution: 0.01°
 - Low dynamic accuracy < 0.4° @ rms
- **Independent Turntable Calibration**
 - Independent Turntable Calibration
Parameters: Sensitivity, Bias,
and Non-Orthogonal Error
- **Highly Rugged and Durable**
 - Ultra-high shock resistance: 2000 g
(0.5 ms, half-sine, 3 axes)
 - Ultra-high vibration resistance: 10 g
(10–2 kHz, 3 axes)
 - Stable operation in full temperature
range: –40 °C to +85 °C
 - 100% magnetic shielding
- **Compact and Versatile Digital Interfaces**
 - Configurable output sampling rate up to
200 Hz
 - Supports CAN interface

Sensor Performance

Tilt Range	Pitch $\pm 80^{\circ}$	
	Roll $\pm 180^{\circ}$	
Angle Measurement Accuracy	< 0.03°	
Angular Rate Measurement Range	$\pm 450^{\circ}/s$	$\pm 2000^{\circ}/s^2$
Resolution	0.01°	
Dynamic Accuracy ¹	0.4°	
Acceleration Measurement Range	$\pm 6g$	
Update Rate	200 HZ	

Electrical

Voltage Input	5V/9V-32V ³
Power Consumption	0.2W-0.36W
Interfaces	CAN

Physical

Connector	M12 aviation connector, 5 pin (male/female)	
Dimensions	AHRS401:47*85*24mm	AHRS402:47*96.5*24mm
Protection Rating	IP68	
Cable Length	40 cm (built-in) + 50 cm (external)	
Operating Temperature	$-40^{\circ}\text{C} \sim 85^{\circ}\text{C}$	
Storage Temperature	$-40^{\circ}\text{C} \sim 85^{\circ}\text{C}$	

Interface Definition

PIN	Color	Definition	Description
1	Shield	PE	Protective Earth (Ground)
2	Red	VIN	5V / 9-32V DC Input
3	Black	GND	Power Ground
4	Green	CAN_H	CAN_BUS
5	White	CAN_L	