

HI13 Series

Industrial-Grade MEMS Attitude Sensor IMU/VRU/AHRS



The HI13 series is a high-performance, compact IMU/VRU/AHRS module with a robust independent enclosure

Product Advantages

Hardware

- Industrial Redundant Sensor
- Smart Production System, Traceable Products
- Multiple Interfaces: USB/UART/CAN
- Operating Temperature: -40 to 85° C
- Factory Calibration, Exceptional Consistency

Software

- EKF, Excellent Dynamic Performance
- Up to 500Hz Data Output
- Bias Stability: Up to 2.5° /h, 30ug

Certification

- RoHS, HF, CE(Safety Standard)Certified

The HI13 series is an IMU/VRU/AHRS module that contain MEMS IMU and magnetic field to perceive object attitude information. It is equipped with extended Kalman filtering and IMU noise dynamic analysis technology, ensuring precise attitude angles even in high-dynamic scenarios and reducing yaw drift

Benefiting from a wealth of industry expertise, our products cater to a wide range of industries including AGV, agricultural machinery, inspection robotics, and unmanned delivery vehicles



AGV/AMR



Inspection Robots



Agri Machinery

Product Parameters

Attitude Angle Range	
Pitch	±90°
Roll	±180°
Heading	±180°

Output Message
Calibrated Acceleration, Angular Velocity
Magnetometer、Barometer(Partial models)
Fused Quaternion and Euler Angles
Module ID, Temperature, Timestamp

IMU Parameters	Accelerometer	Gyroscope	Magnetometer	Barometer
Range	±12g	±2000° /s	±8Guass	300-1100hPa
Resolution	0.001g	0.001° /s	0.25mg	0.06Pa
Sampling Rate	1600Hz	1000Hz	200Hz	100Hz
Bandwidth	150Hz	120Hz	TBD	TBD
Bias Stability(Allan 25°C)	HI13M0	60ug	5.1° /h	
	HI13M3	60ug	2.5° /h	TBD
	HI13R4	30ug	2.5° /h	TBD

Fusion Performance (25°C)	HI13M0	HI13M3	HI13R4
Pitch/Roll (Static)	0.2°	0.2°	0.2°
Pitch/Roll (Dynamic)	0.2°	0.2°	0.2°
Heading Static Drift(6DOF) ^①	0.12° /h	0.12° /h	0.12° /h
Heading Dynamic Drift(6DOF) ^②	<10°	<10°	<5°
Heading Accuracy(AHRS) ^③	×	2°	2°
Heading Rotation Accuracy(6DOF) ^④	<1°	<1°	<1°

① The sensor stationary for 1 hour, drift in the heading angle 1σ

② With the indoor cleaning robot operating for 1 hour, drift in the heading angle 1σ

③ In AHRS mode, heading angle Accuracy

④ Turning the platform continuously in one direction for 10 circles, the heading angle Accuracy

Electrical		
Input Voltage VDD	BTB Connector	3.2-5.5VDC
	Type-C	4.8-5.5VDC
Power Consumption		<135mW
Certification	RoHS HF CE(Safety Standard)	
Data Frame Rate	Non-CAN	0-500Hz
	CAN	0-200Hz

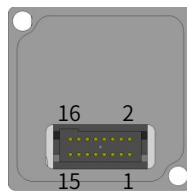
Mechanical		
Package	Type-C+BTB Connector	
	BTB Connector	
Dimensions	BTB	24X24X12mm
	Type-C	25.7X24X12mm
Weight	<11g	
Operating Temperature	-40-85°C	
Enclosure Material	Aluminum Alloy	
IP Rating	IP00	

BTB Connector

Model: 3131-16MG0BK00T2

Female: 2344-216MG0CUNT4

Manufacturer: WCON



Pin Number	Name	Description
1 3 10 16	NC	NC
2	RXD2	UART2 RX
4	TXD2	UART2 TX
5	CAN_RX	CAN RX
6	IO5	NC
7	CAN_TX	CAN TX
8	NRST	Reset Low-Level Active
9	SYNC_IN1	Synchronous input with internal pull-up. Generates data output on falling edge. Can be left unconnected when not in use
11	SYNC_OUT1	Synchronous output, internal pull-up. High when idle, low during data frame, returns high after. Leave unconnected when not in use
12	GND	GND
13	TXD1	UART1 TX Transmit Data
14	VDD	Power Input
15	RXD1	UART1 RX Receive Data

Users can receive data through UART 1

Product Selection

HI13ab-c-d

HI Company	a Sensor	b TC	c Interface	d OEM
13 Product Line	M0 1XIMU	N Without TC	USB USB	000 Default
	M3 1XIMU+Magnetometer	T With TC	UCX UART(TTL)+CAN	Others OEM
	R4 4XIMU+Magnetometer+Barometer	TC:Temperature Compensation		

For CAN interface usage, a compatible CAN interface chip like TJA1044GTK/3Z is required

If you need a temperature-compensated product, please contact us

Cable



USB to Type-C Data Cable with Fixed Screw



Product Ordering

[contact us](#)

USB

Diagram	P/N	Name	Description
	HI13M0N-USB-000	IMU/VRU Module	6DoF 5.1° /h
	HI13M3N-USB-000	IMU/VRU/AHRS Module	6DoF 5.1° /h
	HI13R4N-USB-000	IMU/VRU/AHRS Module	6DoF+Mag+Baro 2.5° /h

UCX

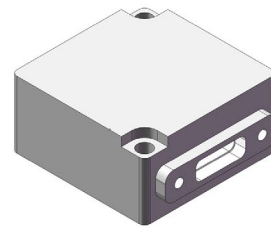
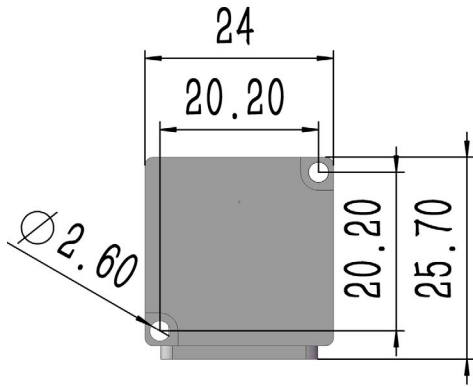
Diagram	P/N	Name	Description
	HI13M0N-UCX-000	IMU/VRU Module	6DoF 5.1° /h
	HI13M3N-UCX-000	IMU/VRU/AHRS Module	6DoF 5.1° /h
	HI13R4N-UCX-000	IMU/VRU/AHRS Module	6DoF+Mag+Baro 2.5° /h

Mag: Magnetometer

Baro: Barometer

Dimensions(mm)

USB



UCX

