



Product Content

2025 Q3



Motion Sensing ● Positioning&Navigation ● Status Monitoring

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Product Series



Motion Sensing

Can precisely perceive information such as the acceleration, angular velocity, and attitude of the measured object.

Positioning&Navigation

Can calculate information such as velocity, position, and attitude of the measured object in real-time

Status Monitoring

Can accurately sense the state information of the measured object.

行业



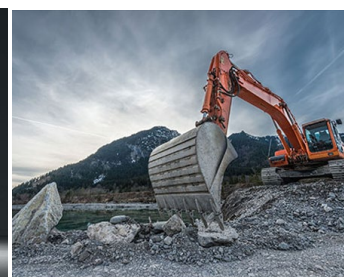
Unmanned Vehicles



Photovoltaics & Wind Power



Humanoid Robots



Construction Machinery

HiPNUC provides professional solutions for various industries requiring attitude perception, positioning & navigation, and condition monitoring. Rich industry experience, high-quality product requirements, and reliable service enable us to quickly deliver reliable solutions tailored to users' scenarios.



Marine & Ocean



Low-Altitude Economy

Technical Support & Warranty

Users can contact us through the following channels for new product information, product materials, and technical support:

Email: overseas1@hipnuc.com

Products are warranted for 2 years

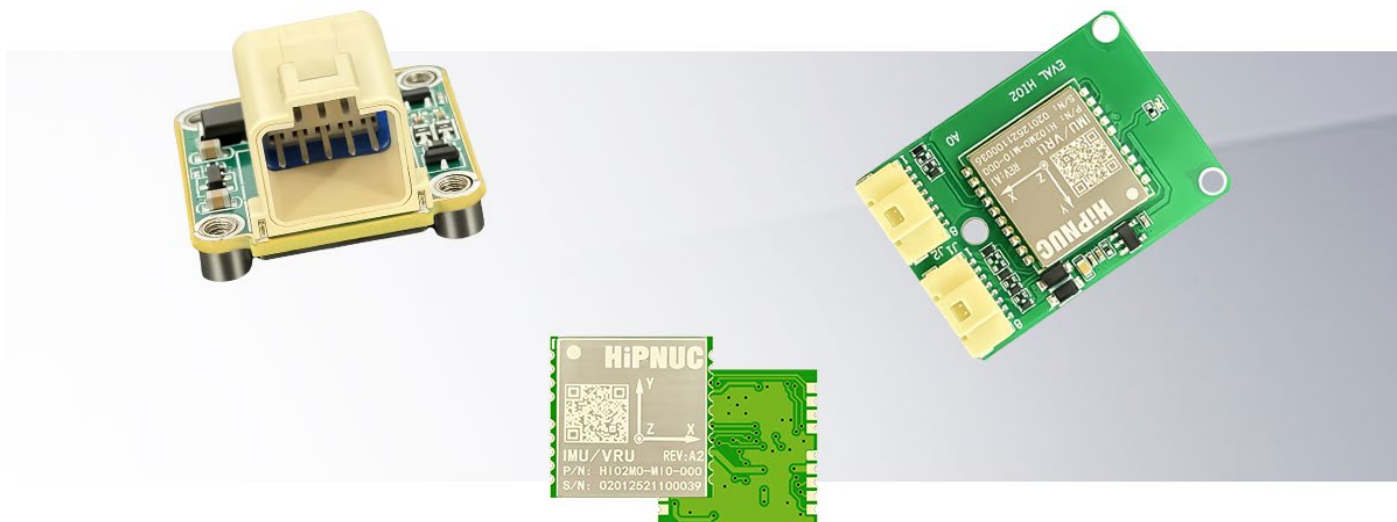


Company Website

HI02 SERIES

Product Category-Motion Sensing

Compact, Low-Cost MEMS-IMU/VRU



FEATURES

Ultra-compact standard small-size package 15X15X2.6mm
Cost-effective
Temperature compensation
Low drift
Extended Kalman Filter (EKF) 200Hz output

APPLICATION

Robot Vacuum Cleaner
Robotic Lawn Mower
Pool Cleaning Robot
Food Delivery Robot
Hotel Service Robot

MODEL LIST

Model

P/N	IMU	VRU	AHRS
HI02M0-MI0-000	√	√	×

SPECIFICATIONS

Gyroscope

Range	$\pm 2000^{\circ}/s$
Bias Instability	$3^{\circ}/h$
Bias Stability	$10^{\circ}/h$
Noise Density	$0.015^{\circ}/s/\sqrt{Hz}$
Bandwidth(3dB)	80Hz

Accelerometer

Range	$\pm 12g$
Bias Instability	0.03mg
Bias Stability	0.07mg
Noise Density	$0.175 mg/\sqrt{Hz}$
Bandwidth(3dB)	90Hz

Fusion Accuracy

Accelerometer	Calibrated
Gyroscope	Calibrated
Pitch/Roll	0.15°
Heading(VRU)	0.3°
Quaternion	Support

Note1：The above values may change after user SMT. Refer to actual performance.

Interface

Communication	UART
Protocols	Binary
Output Frequency	Up to 200Hz

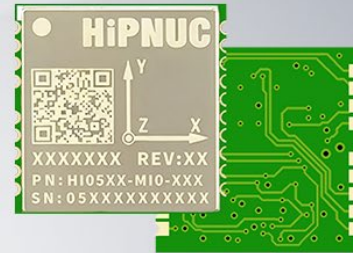
Physical & Environmental

Input Voltage	3.3-5V
Power Consumption	<160mW
Dimension	15X15X2.6mm
Weight	0.8g
Certification	Supports Rohs CE
Temperature	Supports -40-85°C

Software Suite

GUI	CHCenter
SDK	C、STM32、Matlab、Python、Ros
Support	User manuals Data sheet EVAL Hardware Reference Design Online communication

Compact, High-Performance, Full-Featured MEMS-IMU/VRU/AHRS/INS



FEATURES

Standard small-size package 15X15X2.6mm
 Full-featured, high-performance MEMS-IMU/VRU/AHRS/INS
 Temperature compensation, anti-vibration, PPS+GPRMC Sync
 Multiple modes: 6-axis/9-axis/Humanoid Robot/High Vibration/Low-speed Autonomous Driving
 Extended Kalman Filter (EKF) 1000Hz output, external GNSS connectable

APPLICATION

Unmanned Vehicles
 Unmanned Surface Vehicles
 Construction Machinery
 AR/VR
 Humanoid Robots / Robotic Dogs

MODEL LIST

Model

P/N	IMU	VRU	AHRS	Barometer	INS
HI05M2-MI0-000	√	√	×	×	×
HI05R2-MI1-000	√	√	×	×	×
HI05R3-MI1-000	√	√	√	×	×
HI05R4-MI0-000	√	√	√	√	×
HI05N4-MI0-000	√	√	√	√	√

Note1: MI0 interface requires external CAN transceiver for CAN; MI1 interface has integrated CAN transceiver.

SPECIFICATIONS

Gyroscope

Range	Up to $\pm 4000^{\circ}/s$	
Bias Instability	HI05MX	$2.5^{\circ}/h$
	HI05RX	$1.7^{\circ}/h$
Bias Stability	HI05MX	$10^{\circ}/h$
	HI05RX	$4^{\circ}/h$
Noise Density	HI05MX	$0.004^{\circ}/s/\sqrt{Hz}$
	HI05RX	$0.0025^{\circ}/s/\sqrt{Hz}$
Bandwidth(3dB)	Up to 200Hz	

Fusion Accuracy

Accelerometer	Calibrated
Gyroscope	Calibrated
Pitch/Roll	0.15°
Heading(VRU)	0.3°
Heading(AHRS)	2°
Quaternion	Support

Note1: The above values may change after user SMT.
Refer to actual performance.

Interface

Communication	UART/CAN
Protocols	Binary/Modbus/CANopen
Output Frequency	Up to 1000Hz
SYNC	SYNC_IN、SYNC_OUT

Note1: MI0 interface requires external CAN transceiver for CAN;
MI1 interface has integrated CAN transceiver.

Software Suite

GUI	CHCenter
SDK	C、STM32、Matlab、Python、Ros
Support	User manuals
	Data sheet
	EVAL Hardware Reference Design
	Online communication

Accelerometer

Range	$\pm$ Up to 32g	
Bias Instability	HI05MX	0.018mg
	HI05RX	0.012mg
Bias Stability	HI05MX	0.03mg
	HI05RX	0.015mg
Noise Density	HI05MX	$0.08\text{ mg}/\sqrt{Hz}$
	HI05RX	$0.05\text{mg}/\sqrt{Hz}$
Bandwidth(3dB)	Up to 200Hz	

Magnetometer

Range	Up to ± 20 Gauss
Total RMS noise	450nT
Nonlinearity	20uT

Barometer

Range	300-1200hPa
Resolution	0.006hPa
Relative accuracy	$\pm 0.06\text{hPa}$

Physical & Environmental

Input Voltage	3.3-5V
Power Consumption	<205mW
Dimension	15X15X2.6mm
Weight	<2g
Certification	Supports Rohs CE
Temperature	Supports -40-85°C

Compact, High-Performance MEMS-IMU/VRU/AHRS



FEATURES

Compact Embedded Enclosure Package
 High-Performance MEMS-IMU/VRU/AHRS | 4000° /s 32g
 Temperature compensation, heading angle enhancement
 Multiple modes: 6-axis/9-axis/Humanoid Robot High Vibration/Low-speed Autonomous Driving
 Extended Kalman Filter (EKF) 1000Hz output

APPLICATION

Autonomous Driving
 Humanoid Robots
 Robotic Dogs
 UAV

MODEL LIST

Model

P/N	IMU	VRU	AHRS
HI12M0-MI1-000	√	√	×
HI12H1-MI1-000	√	√	×
HI12H3-MI1-000	√	√	×
HI12H4-MI1-000	√	√	√
HI12H3-MI1-100	√	√	×
HI12S2-MI1-000	√	√	×
HI12S3-MI1-000	√	√	√
HI12S2-MI0-000	√	√	×
HI12S3-MI0-000	√	√	√

MI0 represents 2X UART + synchronous interface

MI1 represents UART+CAN + synchronous interface

000 represents Molex connector

100 represents Board to Board connector

The HI12H series features a Z-axis gyroscope with excellent vibration resistance

SPECIFICATIONS

Gyroscope

Range	H12M0	2000° /s
	HI12HX	400° /s
	HI12SX	up to 4000° /s
Bias Instability	H12M0	3° /h
	HI12HX	2° /h
	HI12SX	1.5° /h
Bias Stability	H12M0	10° /h
	HI12HX	4.2° /h
	HI12SX	3.5° /h
Noise Density	H12M0	0.015 ° /s/ √ Hz
	HI12HX	0.07° /s/ √ Hz
	HI12SX	3.5° /h
Bandwidth(3dB)	H12M0/HI12HX	Up to 200Hz
	H12SX	Up to 400Hz

Fusion Accuracy

Accelerometer	Calibrated
Gyroscope	Calibrated
Pitch/Roll	0.15°
Heading(VRU)	0.2°
Heading(AHRS)	2°
Quaternion	Support

Interface

Communication	UART/CAN
Protocols	Binary/Modbus/CANopen
Output Frequency	Up to 1000Hz
SYNC	SYNC_IN、SYNC_OUT

Note1: Molex 集成 CAN 收发器，板对板连接器使用 CAN 通信需要外接 CAN 收发器

Software Suite

GUI	CHCenter
SDK	C、STM32、Matlab、Python、Ros
Support	User manuals Data sheet EVAL Hardware Reference Design Online communication

Accelerometer

Range	HI12M0/HI12HX	up to 24g
	HI12SX	up to 32g
Bias Instability	H12M0/HI12H1	0.03mg
	HI12H3/HI12H4	0.018mg
	HI12SX	0.01mg
Bias Stability	H12M0/HI12H1	0.07mg
	HI12H3/HI12H4	0.035mg
	HI12SX	0.012mg
Noise Density	H12M0/HI12H1	0.175mg √ Hz
	HI12H3/HI12H4	0.09mg √ Hz
	HI12SX	0.04mg √ Hz
Bandwidth(3dB)	H12M0/HI12HX	Up to 200Hz
	H12SX	Up to 400Hz

Magnetometer

Up to ± 20 Gauss

Range	450nT
Total RMS noise	20uT
Nonlinearity	
Physical & Environmental	3.6-5V
Input Voltage	<300mW
Power Consumption	22X22X10mm
Dimension	<8g
Weight	Supports Rohs CE
Certification	Supports -40-85°C
Temperature	

Robust Type-C Interface, High-Performance MEMS-IMU/VRU/AHRS



FEATURES

- Compact Type-C enclosure package
- High-performance MEMS-IMU/VRU/AHRS
- Robust Type-C interface for convenient evaluation
- Temperature compensation
- Multiple modes: 6-axis/9-axis/Humanoid Robot/High Vibration/Low-speed Autonomous Driving
- Extended Kalman Filter (EKF) 1000Hz output

APPLICATION

- Autonomous Driving
- Humanoid Robots
- Robotic Dogs
- Educational Robots

MODEL LIST

Model

P/N	IMU	VRU	AHRS	Barometer
HI13M0-USB-000	√	√	×	×
HI13R2-USB-000	√	√	×	×
HI13S2-USB-000	√	√	×	×
HI13R4-USB-000	√	√	√	√
HI13S4-USB-000	√	√	√	√

SPECIFICATIONS

Gyroscope

Range	HI13M0/HI13RX	$\pm 2000^{\circ} / s$
	HI13SX	$\pm 4000^{\circ} / s$
Bias Instability	HI13M0	$3^{\circ} / h$
	HI13RX	$1.6^{\circ} / h$
	HI13SX	$1.7^{\circ} / h$
Bias Stability	HI13M0	$10^{\circ} / h$
	HI13RX	$5^{\circ} / h$
	HI13SX	$4^{\circ} / h$
Noise Density	HI13M0	$0.015^{\circ} / s / \sqrt{Hz}$
	HI13RX	$0.08^{\circ} / s / \sqrt{Hz}$
	HI13SX	$0.0025^{\circ} / s / \sqrt{Hz}$

Bandwidth(3dB) Up to 400Hz
Note1: HI13 series bandwidth can reach 400Hz, other series 200Hz

Fusion Accuracy

Accelerometer	Calibrated
Gyroscope	Calibrated
Pitch/Roll	0.15°
Heading(VRU)	0.2°
Heading(AHRS)	2°
Quaternion	Support

Physical & Environmental

Input Voltage	5V
Power Consumption	<300mW
Dimension	25.7X24X12mm
Weight	<11g
Certification	Supports Rohs CE
Temperature	Supports -40-85°C

Accelerometer

Range	HI13M0/HI13RX	$\pm 12g$
	HI13SX	$\pm 32g$
Bias Instability	HI13M0	0.03mg
	HI13RX	0.018mg
	HI13SX	0.012mg
Bias Stability	HI13M0	0.07mg
	HI13RX	0.035mg
	HI13SX	0.015mg
Noise Density	HI13M0	$0.175mg / \sqrt{Hz}$
	HI13RX	$0.09mg / \sqrt{Hz}$
	HI13SX	$0.05mg / \sqrt{Hz}$

Bandwidth(3dB) Up to 400Hz

Magnetometer

Range	Up to ± 20 Gauss
Total RMS noise	450nT
Nonlinearity	20uT

Barometer

Range	300-1200hPa
Resolution	0.006hPa
Relative accuracy	$\pm 0.06hPa$

Interface

Communication	USB
Protocols	Binary
Output Frequency	Up to 1000Hz

Software Suite

GUI	CHCenter
SDK	C、STM32、Matlab、Python、Ros
Support	User manuals Data sheet Online communication

Waterproof Enclosure, High-Performance MEMS-IMU/VRU/AHRS



FEATURES

Compact waterproof enclosure package
 High-performance MEMS-IMU/VRU/AHRS
 Temperature compensation
 Multiple modes: 6-axis/9-axis/Humanoid Robot/High Vibration/Low-speed Autonomous Driving
 Extended Kalman Filter (EKF) 1000Hz output
 Multiple interfaces: UART(RS232/TTL), RS485, CAN, USB, and PPS+UTC/GPRMC synchronization
 Wide voltage input up to 48V

APPLICATION

Autonomous Driving
 Humanoid Robots
 Robotic Dogs
 UAV
 Construction Machinery

MODEL LIST

Model

P/N	IMU	VRU	AHRS	Barometer
HI14M0-XXX-000	√	√	×	×
HI14R2-XXX-000	√	√	×	×
HI14S2-XXX-000	√	√	×	×
HI14R3-XXX-000	√	√	√	×
HI14S3-XXX-000	√	√	√	×
HI14R5-XXX-000	√	√	√	×

Note1: XXX represents optional interfaces: UART(RS232/TTL)/RS485/CAN/USB/SYNC

SPECIFICATIONS

Accelerometer

Range	HI14M0/HI14RX HI14SX	$\pm 12g$ $\pm 32g$
Bias Instability	HI14M0	0.03mg
	HI14R2/HI14R3	0.018mg
	HI14R5	0.012mg
	HI14SX	0.012mg
Bias Stability	HI14M0	0.07mg
	HI14R2/HI14R3	0.035mg
	HI14R5	0.025mg
	HI14SX	0.015mg
Noise Density	HI14M0	0.175mg/√Hz
	HI14R2/HI14R3	0.09mg/√Hz
	HI14R5	0.06mg/√Hz
	HI14SX	0.05mg/√Hz

Bandwidth(3dB) Up to 400Hz

Note1: HI14SX series bandwidth can reach 400Hz, other series 200Hz

Fusion Accuracy

Accelerometer	Calibrated
Gyroscope	Calibrated
Pitch/Roll	0.15°
Heading(VRU)	0.2°
Heading(AHRS)	2°
Quaternion	Support

Interface

Communication	RS232/TTL/RS485/CAN/USB/SYNC
Protocols	Binary/CANopen/Modbus/J1939
Output Frequency	UART/USB Up to 1000Hz

Software Suite

GUI	CHCenter
SDK	C、STM32、Matlab、Python、Ros
Support	User manuals Data sheet Online communication

Gyroscope

Range	HI14M0/HI14RX HI14SX	$\pm 2000^{\circ}/s$ $\pm 4000^{\circ}/s$
Bias Instability	HI14M0	3°/h
	HI14R2/HI14R3	1.6°/h
	HI14R5	1.2°/h
	HI14SX	1.7°/h
Bias Stability	HI14M0	10°/h
	HI14R2/HI14R3	5°/h
	HI14R5	4°/h
	HI14SX	4°/h
Noise Density	HI14M0	0.015°/s/√Hz
	HI14R2/HI14R3	0.08°/s/√Hz
	HI14R5	0.06°/s/√Hz
	HI14SX	0.0025°/s/√Hz

Bandwidth(3dB) Up to 400Hz

Magnetometer

Range	HI14M0/HI14RX HI14SX	$\pm 2Gauss$ Up to $\pm 20 Gauss$
Total RMS noise		450nT
Nonlinearity	HI14M0/HI14RX HI14SX	0.1Fs% 20uT

Physical & Environmental

Input Voltage	CAN/RS485	7to 48V
	UART	5to 48V
	USB	5V
Power Consumption		<600mW
Dimension		58.5X40X20mm
Weight		<75g
Certification		Supports EMC Rohs CE
Temperature		Supports -40-85°C

EtherCAT Interface, High-Performance MEMS-IMU/VRU



MODEL LIST

Model

P/N	IMU	VRU	AHRS	Barometer
HI15R2-ECAT-000	√	√	×	×

SPECIFICATIONS

Gyroscope

Range	$\pm 2000^{\circ} / s$
Bias Instability	$1.6^{\circ} / h$
Bias Stability	$5^{\circ} / h$
Noise Density	$0.08^{\circ} / s / \sqrt{Hz}$
Bandwidth(3dB)	Up to 200Hz

Fusion Accuracy

Accelerometer	Calibrated
Gyroscope	Calibrated
Pitch/Roll	0.15°
Heading(VRU)	0.2°
Quaternion	Support

Interface

Communication	EtherCAT
Protocols	Binary
Output Frequency	Up to 1000Hz

Accelerometer

Range	$\pm 12g$
Bias Instability	0.018mg
Bias Stability	0.035mg
Noise Density	$0.09mg / \sqrt{Hz}$
Bandwidth(3dB)	Up to 145Hz

Physical & Environmental

Input Voltage	5-30V
Power Consumption	<1.3W
Dimension	39.1X36X13mm
Weight	<25g
Certification	Supports Rohs CE
Temperature	Supports -40-85°C

Software Suite

GUI	CHCenter
Support	User manuals Data sheet Online communication

ABS Enclosure, High-Performance MEMS-IMU/VRU/AHRS



MODEL LIST

Model

P/N	IMU	VRU	AHRS	Barometer
HI16M2-XXX-1XX	√	√	×	×
HI16R2-XXX-1XX	√	√	×	×
HI16R4-XXX-1XX	√	√	√	√

Note1: XXX represents two optional interfaces: 2XRS232+SYNC or RS232+CAN+SYNC

FEATURES

Compact ABS enclosure package

High-performance MEMS-IMU/VRU/AHRS

Temperature compensation

Multiple modes: 6-axis/9-axis/Humanoid Robot/High Vibration/Low-speed Autonomous Driving

Extended Kalman Filter (EKF) 1000Hz output

Multiple interfaces: UART(RS232/TTL), CAN, USB, supports PPS+UTC/GPRMC synchronization

Wide voltage input up to 36V

APPLICATION

Autonomous Driving

Humanoid Robots

Robotic Dogs

UAV

SPECIFICATIONS

Gyroscope

Range	Up to $\pm 4000^{\circ} / s$	
Bias Instability	HI16MX	2.5° /h
	HI16RX	1.7° /h
Bias Stability	HI16MX	10° /h
	HI16RX	4° /h
Noise Density	HI16MX	0.004 ° /s/ $\sqrt{\text{Hz}}$
	HI16RX	0.0025 ° /s/ $\sqrt{\text{Hz}}$
Bandwidth(3dB)	Up to 400Hz	

Fusion Accuracy

Accelerometer	Calibrated
Gyroscope	Calibrated
Pitch/Roll	0.15°
Heading(VRU)	0.1°
Heading(AHRS)	2°
Quaternion	Support

Interface

Communication	RS232/CAN
Protocols	Binary/CANopen
Output Frequency	Up to 1000Hz
SYNC	SYNC_IN、SYNC_OUT

Software Suite

GUI	CHCenter
SDK	C、STM32、Matlab、Python、Ros
Support	User manuals Data sheet Online communication

Accelerometer

Range	$\pm$ Up to 32g	
Bias Instability	HI16MX	0.018mg
	HI16RX	0.012mg
Bias Stability	HI16MX	0.03mg
	HI16RX	0.015mg
Noise Density	HI16MX	0.08 mg/ $\sqrt{\text{Hz}}$
	HI16RX	0.05mg/ $\sqrt{\text{Hz}}$
Bandwidth(3dB)	Up to 400Hz	

Magnetometer

Range	Up to ± 20 Gauss
Total RMS noise	450nT
Nonlinearity	20uT

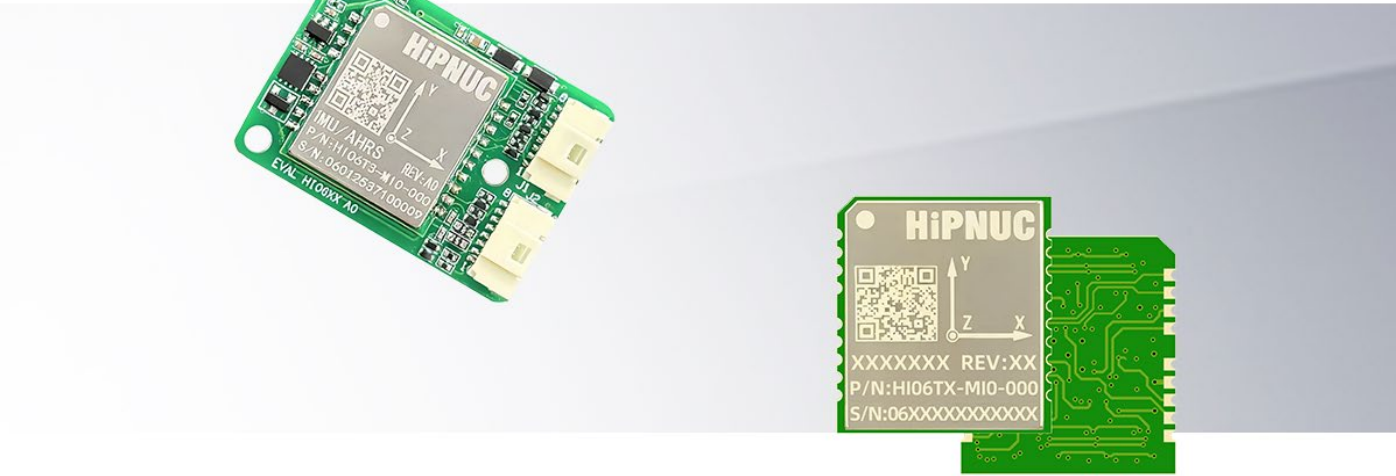
Barometer

Range	300-1200hPa
Resolution	0.006hPa
Relative accuracy	± 0.06 hPa

Physical & Environmental

Input Voltage	5-30V
Power Consumption	<400mW
Dimension	30X29X17mm
Weight	
Certification	Supports Rohs CE
Temperature	Supports -40-85°C

Tactical-Grade MEMS-IMU/VRU/AHRS



FEATURES

- Standard small-size package 15X15X2.6mm
- High-performance MEMS-IMU/VRU/AHRS
- Temperature compensation,anti-vibration,PPS+GPRMC Sync
- Multiple modes: 6-axis/9-axis/Humanoid Robot/High Vibration/Low-speed Autonomous Driving
- Extended Kalman Filter (EKF) 1000Hz output

APPLICATION

- Autonomous Driving
- UAV
- Construction Machinery
- AR/VR
- Humanoid Robots

MODEL LIST

Model

P/N	IMU	VRU	AHRS	Barometer	INS
HI06T2-MI0-000	√	√	×	×	×
HI06T3-MI0-000	√	√	√	×	×
HI06N3-MI0-000	√	√	√	×	√

SPECIFICATIONS

Gyroscope

Range	up to $\pm 4000^{\circ}/s$
Bias Instability	$1^{\circ}/h$
Bias Stability	$2.3^{\circ}/h$
Noise Density	$0.0015^{\circ}/s/\sqrt{Hz}$
Bandwidth(3dB)	up to 400Hz

Fusion Accuracy

Accelerometer	Calibrated
Gyroscope	Calibrated
Pitch/Roll	0.15°
Heading(VRU)	0.1°
Quaternion	Support

Note1: The above values may change after user SMT. Refer to actual performance.

Interface

Communication	UART/CAN/I2C
Protocols	Binary
Output Frequency	Up to 1000Hz

Note1: CAN needs CAN PHY eg. TJA1044

Accelerometer

Range	up to $\pm 32g$
Bias Instability	0.007mg
Bias Stability	0.008mg
Noise Density	$0.025\text{ mg}/\sqrt{Hz}$
Bandwidth(3dB)	up to 400Hz

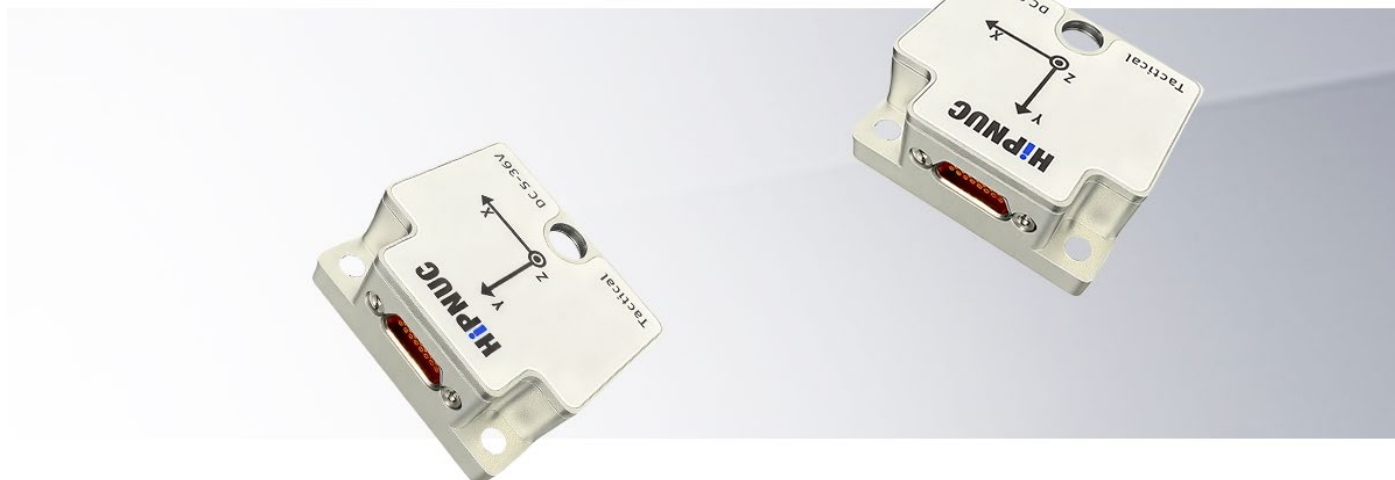
Physical & Environmental

Input Voltage	3.3-5V
Power Consumption	<160mW
Dimension	18X20X2.6mm
Weight	2g
Certification	Supports Rohs CE
Temperature	Supports -40-85°C

Software Suite

GUI	CHCenter
SDK	C、STM32、Matlab、Python、Ros
Support	User manuals Data sheet EVAL Hardware Reference Design Online communication

Tactical-Grade MEMS-IMU/VRU/AHRS



FEATURES

J30 waterproof enclosure package
 Tactical-Grade MEMS-IMU/VRU/AHRS
 Temperature compensation
 Multiple modes: 6-axis/9-axis/Humanoid Robot/
 High Vibration/Low-speed Autonomous Driving
 Extended Kalman Filter (EKF) 1000Hz output
 Multiple interfaces: RS232, CAN, RS422, PPS+UTC/
 GPRMC synchronization
 Wide voltage input up to 36V

APPLICATION

Autonomous Driving
 Humanoid Robots
 Robotic Dog
 UAV/ROV

MODEL LIST

Model

P/N	IMU	VRU	AHRS	Barometer
HI70T2-XXX-000	√	√	×	×
HI70T3-XXX-000	√	√	√	×

Note1: XXX represents two optional interfaces: 2XRS232+CAN+SYNC or RS422+CAN+SYNC

SPECIFICATIONS

Gyroscope

Range	$\pm 320^{\circ} / s$
Bias Instability	$0.3^{\circ} / h$
Bias Stability	$0.5^{\circ} / h$
Noise Density	$0.00006^{\circ} / s / \sqrt{Hz}$
Bandwidth(3dB)	250Hz

Fusion Accuracy

Accelerometer	Calibrated
Gyroscope	Calibrated
Pitch/Roll	0.05°
Heading(VRU)	0.1°
Heading(AHRS)	0.5°
Quaternion	Support

Interface

Communication	RS232/RS422/CAN
Protocols	Binary/CANopen
Output Frequency	Up to 1000Hz
SYNC	SYNC_IN、SYNC_OUT

Accelerometer

Range	$\pm 16g$
Bias Instability	0.01mg
Bias Stability	0.03mg
Noise Density	$0.08 mg / \sqrt{Hz}$
Bandwidth(3dB)	235Hz

Magnetometer

Range	Up to ± 20 Gauss
Total RMS noise	450nT
Nonlinearity	20uT

Physical & Environmental

Input Voltage	5-30V
Power Consumption	<400mW
Dimension	44.8X38.6X18.5mm
Weight	55g
Certification	Supports Rohs CE
Temperature	Supports -40-85°C

Software Suite

GUI	CHCenter
SDK	C、STM32、Matlab、Python、Ros
Support	User manuals Data sheet Online communication

Tactical-Grade MEMS-IMU/VRU/MRU/AHRS



FEATURES

Compact Housing Board-to-Board Connector
 Tactical-Grade MEMS-IMU/VRU/AHRS
 Temperature compensation
 Multiple modes: 6-axis/9-axis/Humanoid Robot/
 High Vibration/Low-speed Autonomous Driving
 Extended Kalman Filter (EKF) 1000Hz output
 Multiple interfaces:UART/CAN and PPS+UTC/GPRMC

APPLICATION

Autonomous Driving
 Humanoid Robots
 Robotic Dog
 UAV
 ROV
 Dynamic Positioning System
 Vessel Motion Monitoring
 Active Heave Compensation

MODEL LIST

Model

P/N	IMU	VRU	AHRS	Barometer
HI71T2-MI0-000	√	√	×	×
HI71T4-MI0-000	√	√	√	√

SPECIFICATIONS

Gyroscope

Range	$\pm 320^\circ /s$
Bias Instability	$0.3^\circ /h$
Bias Stability	$0.5^\circ /h$
Noise Density	$0.00006^\circ /s / \sqrt{Hz}$
Bandwidth(3dB)	250Hz

Fusion Accuracy

Accelerometer	Calibrated
Gyroscope	Calibrated
Pitch/Roll	0.05°
Heading(VRU)	0.1°
Heading(AHRS)	0.5°
Quaternion	Support
Heave(real-time)	5cm/5%

Physical & Environmental

Input Voltage	5V
Power Consumption	<400mW
Dimension	24X24X14mm
Weight	12.5g
Certification	Supports Rohs CE
Temperature	Supports -40-85°C

Accelerometer

Range	$\pm 16g$
Bias Instability	0.01mg
Bias Stability	0.03mg
Noise Density	$0.08 mg / \sqrt{Hz}$
Bandwidth(3dB)	235Hz

Magnetometer

Range	Up to ± 20 Gauss
Total RMS noise	450nT
Nonlinearity	20uT

Interface

Communication	UART/CAN
Protocols	Binary/CANopen/Ascii/NMEA
Output Frequency	Up to 1000Hz
SYNC	SYNC_IN、SYNC_OUT

Note1: CAN interface requires external CAN transceiver

Software Suite

GUI	CHCenter
SDK	C、STM32、Matlab、Python、Ros
Support	User manuals Data sheet Online communication

Tactical-Grade MEMS-IMU/VRU/MRU/AHRS



FEATURES

- Waterproof enclosure package
- Tactical-Grade MEMS-IMU/VRU/MRU
- Temperature compensation
- Extended Kalman Filter (EKF) 200Hz output
- Isolated RS232, RS422, Ethernet interfaces
- Wide voltage input up to 36V

APPLICATION

- Ship Dynamic Positioning
- Ship Motion Monitoring
- Active Heave Compensation
- ROV

MODEL LIST

Model

P/N	IMU	VRU	AHRS	Barometer
HI95T2-MI0-000	√	√	×	×
HI95T3-MI0-000	√	√	√	×

SPECIFICATIONS

Fusion Accuracy

Pitch/Roll	0.05°
Heave(real-time)	5cm/5%
Angular rate	320° /s
Noise Density	0.00006 ° /s/ √ Hz
Acceleration	±16g
Noise Density	0.08 mg/ √ Hz
Heading(VRU)	0.1°
Heading(AHRS)	0.5°
Roll/Pitch/Yaw	±180° /±90° /±180°

Interface

Communication	RS232/RS422/Ethernet
Protocols	Binary/Ascii/NMEA
Output Frequency	Up to 100Hz

Physical & Environmental

Input Voltage	9-36V
Power Consumption	<3W
Internal storage	8GB
Dimension	14X14X13.05cm
Weight	2.2Kg
Certification	Supports Rohs CE
Temperature	Supports -40-85°C

L1、 L5 Dual band GNSS-INS Module



FEATURES

- Compact standard package
- L1, L5 Dual-Band
- Support RTCM data
- Supports PPS timing accuracy $\pm 15\text{ns}$
- Part of models integrate IMU and RTK

APPLICATION

- Deformation & Position Monitoring
- Timing
- UAV
- Precision Agriculture
- Autonomous Driving

MODEL LIST

Model

P/N	Name	Desicription
HI600S	GNSS Module	L1、 L5 GNSS Module Support RTCM

SPECIFICATIONS

GNSS

Receiver	L1, L5 dual-band receiver, supports GPS, Beidou, Glonass, Galileo, QZSS concurrently	
Band	GPS/QZSS:L1 C/A,L5 GLONASS:L1 Galileo:E1,E5a BDS:B1I,B2a	
Positioning Accuracy	Single RTK	Horizontal 1.2m, Vertical 2.4m Horizontal 2.5cm, Vertical 5cm
Velocity Accuracy	0.1m/s	

Timing 15ns

Cole Start 28s

Hot Start 5s

Interface

Communication UART

Protocols NMEA0183/RTCM3.X

Output Frequency Up to 10Hz

Physical & Environmental

Input Voltage 3.3V

Power Consumption <250mW

Internal storage 8GB

Dimension 12.2X16X2.5mm

Weight <2g

Certification Supports Rohs CE

Temperature Supports -40-85°C

Compact, High-Precision Dual RTK-GNSS/INS Module



FEATURES

Compact Waterproof Enclosure
Multi-Constellation, Multi-Band Dual RTK-GNSS
Dual-Antenna Heading Accuracy 0.1° @ 1m Baseline
RTK Positioning Accuracy 1cm
High-Performance MEMS-IMU Allan 1.7° /h 12ug

APPLICATION

Autonomous Driving
UAV/ROV
Satellite Communication on the Move
Precision Agriculture
Construction Machinery

MODEL LIST

Model

P/N	Name	Description
HI32S6-XXX-000	Single RTK-GNSS/INS Module	Multi-Constellation Multi-Band Single RTK-GNSS/INS Module
HI32S7-XXX-000	Dual RTK-GNSS/INS Module	Multi-Constellation Multi-Band Dual RTK-GNSS/INS Module

SPECIFICATIONS

GNSS

Channels	1048
Constellation	BDS/GPS/GLONASS/Galileo/QZSS
Receive Bands	GPS:L1 C/A/L2P(Y)/L2C/L5 BDS:B1I/B2I/B3I/B1C*,B2b* Galileo:E1, E5a, E5b,E6* GLONASS:G1/G2 QZSS:L1C/A, L2C, L5, L6*
Position Accuracy	Single RMS DGPS RMS RTK RMS PPP RMS
	Horizontal 1.5m, Vertical 2.5m Horizontal 0.4m, Vertical 0.8m Horizontal 0.8cm+1ppm, Vertical 1.5cm+1ppm Horizontal 5cm, Vertical 10cm

Heading Accuracy	0.1° / 1m baseline
Timing Accuracy	±20ns
Velocity Accuracy	0.03m/s
Cold Start	28s
Hot Start	5s
Data Update Rate	20Hz
Differential Data	RTCM V3.X
Data Format	NMEA0183

Gyroscope

Range	± 4000° /s
Bias Instability	1.7° /h
Bias Stability	4° /h
Noise Density	0.0025 ° /s/ √ Hz
Bandwidth(3dB)	Up to 200Hz

Accelerometer

Range	± 32g
Bias Instability	0.012mg
Bias Stability	0.015mg
Noise Density	0.05mg/ √ Hz
Bandwidth(3dB)	Up to 200Hz

Fusion

Parameters	Description	Data Sources
Data Output	NMEA(GGA/RMC/VTG)	GNSS
	COM1/RS422 NMEA(SXT)	GNSS/INS
	Binary(HiPNUC)	GNSS/INS
Data Output	CAN SAEJ1939	GNSS/INS
Data Content	Velocity, Position, Attitude, Time, etc.	
Fusion Algorithm	EKF	
Auxiliary Sensors	Odometer, DTU, etc.	

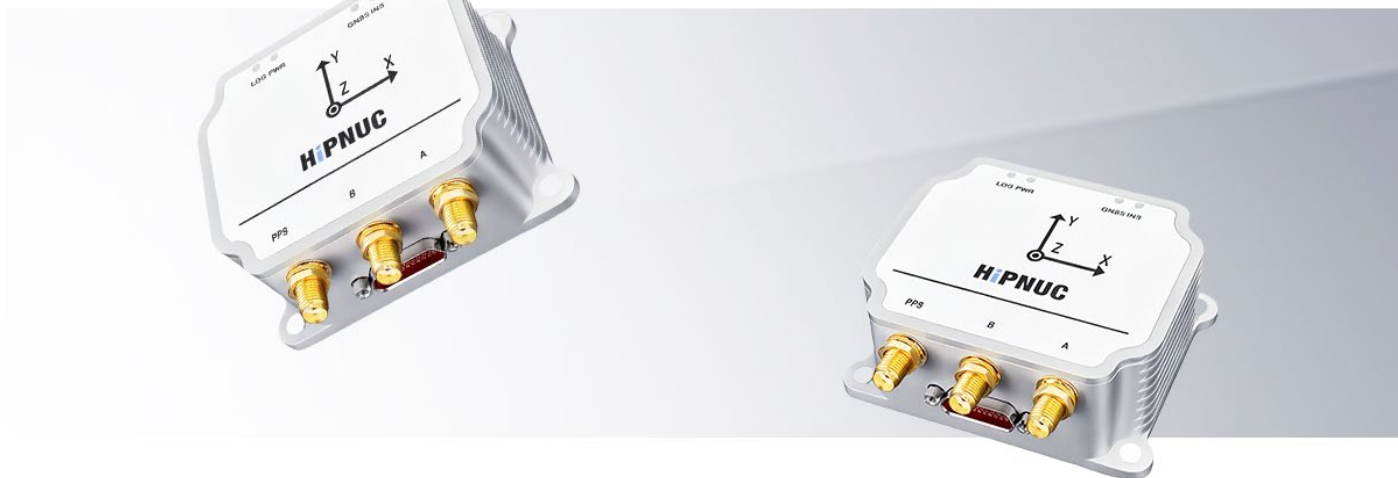
Accuracy

Outage duration	Positioning mode	Positioning accuracy	Velocity accuracy	Attitude accuracy	
				Pitch/Roll	Heading
3s	RTK and Odometer	3cm	0.03m/s	0.1°	0.1°
10s		30cm	0.08m/s	0.15°	0.15°
60s		2-5m	0.2m/s	0.15°	0.25°

Physical & Environmental

Input Voltage	9-36V	Connector	Push-pull Self-Latching
Power Consumption	<1.8W		
Dimension	75X70.5X25.2mm		
Weight	180g		
Certification	Supports Rohs CE		
Temperature	Supports -40-85°C		

Tactical-Grade, High-Precision Dual RTK-GNSS/INS Module



FEATURES

Compact waterproof enclosure, built-in 4GB storage
 Multi-Constellation, Multi-Band, Tightly-Coupled Dual RTK-GNSS
 Dual-Antenna Heading Accuracy 0.1° @ 1m Baseline
 RTK Positioning Accuracy 1cm
 High-Performance Tactical-Grade MEMS-IMU Allan 0.3° / h, 10ug
 Isolated power, Isolated interfaces: RS-232/RS-422/CAN/Ethernet

APPLICATION

Autonomous Driving
 UAV/ROV
 Satellite Communication on the Move
 Precision Agriculture
 Construction Machinery

MODEL LIST

Model

P/N	Name	Description
HI33T7-MI0-000	Dual RTK-GNSS/INS Module	Multi-Constellation, Multi-Band, Tightly-Coupled Dual RTK-GNSS/INS Module

SPECIFICATIONS

GNSS

Channels	1048
Constellation	BDS/GPS/GLONASS/Galileo/QZSS
Receive Bands	GPS:L1 C/A/L2P(Y)/L2C/L5 BDS:B1I/B2I/B3I/B1C*,B2b* Galileo:E1, E5a, E5b,E6* GLONASS:G1/G2 QZSS:L1C/A, L2C, L5, L6*
Position Accuracy	Single RMS DGPS RMS RTK RMS PPP RMS
	Horizontal 1.5m, Vertical 2.5m Horizontal 0.4m, Vertical 0.8m Horizontal 0.8cm+1ppm, Vertical 1.5cm+1ppm Horizontal 5cm, Vertical 10cm

Heading Accuracy	0.1° / 1m baseline
Timing Accuracy	±20ns
Velocity Accuracy	0.03m/s
Cold Start	28s
Hot Start	5s
Data Update Rate	20Hz
Differential Data	RTCM V3.X
Data Format	NMEA0183

Gyroscope

Range	± 320° /s
Bias Instability	0.3° /h
Bias Stability	0.5° /h
Noise Density	0.00006 ° /s/ √ Hz
Bandwidth(3dB)	Up to 250Hz

Accelerometer

Range	± 16g
Bias Instability	0.01mg
Bias Stability	0.03mg
Noise Density	0.05mg/ √ Hz
Bandwidth(3dB)	Up to 235Hz

Fusion

Parameters	Description	Data Sources
Data Output	NMEA(GGA/RMC/VTG)	GNSS
	COM1/RS422 NMEA(SXT)	GNSS/INS
	Binary(HiPNUC)	GNSS/INS
Data Output	CAN SAEJ1939	GNSS/INS
Data Content	Velocity, Position, Attitude, Time, etc.	
Fusion Algorithm	EKF	
Auxiliary Sensors	Odometer, DTU, etc.	

Accuracy

Outage duration	Positioning mode	Positioning accuracy	Velocity accuracy	Attitude accuracy Pitch/Roll	Heading
3s		3cm	0.03m/s	0.05°	0.05°
10s	RTK and Odometer	30cm	0.08m/s	0.01°	0.1°
60s		2-5m	0.2m/s	0.1	0.15°

Physical & Environmental

Input Voltage	9-36V		
Power Consumption	<4W	Connector	J30 21Pin
Dimension	75X70.5X25.2mm	Internal storage	8GB
Weight	260g	Temperature	Supports -40-85°C
Certification	Supports Rohs CE		

Digital/Analog Dynamic Inclination Sensor



FEATURES

- Compact waterproof enclosure
- 5-48V wide voltage input
- Dynamic inclinometer sensor, strong vibration resistance
- RS-485/CAN/Analog current/voltage output
- Accuracy 0.15°

APPLICATION

- Construction Machinery
- Wind Power
- Photovoltaics (PV)

MODEL LIST

Model

P/N	Name
HI50M0-XXX-DXX-XX	Dynamic Inclinometer
HI50R2-XXX-DXX-XX	Dynamic Inclinometer

XXX:Optional interfaces CAN, 485, Analog, etc.
DXX:Selectable 1-axis/2-axis and connector quantity info
XX:Selectable vertical/horizontal range info
Refer to HI50 series datasheet for details.

SPECIFICATIONS

Gyroscope

Range	± 2000° /s
Bandwidth	90Hz

Accelerometer

Range	± 12g
Bandwidth	80Hz

Accuracy

Parameters	Product	1-AXIS	2-AXIS
Installation Direction		Vertical	Horizontal/Vertical
Measurement Range		0-360°	X ±180° Y ±90°
Accuracy		Better than 0.2°	Better than 0.2°

Physical & Environmental

Input Voltage		9-36V	
Power Consumption		<0.6W	Connector M12-5Pin
Dimension		63.5X45X22mm	IP Rating IP68
Weight		100g	
Certification		Supports Rohs CE	
Temperature		Supports -40-85°C	