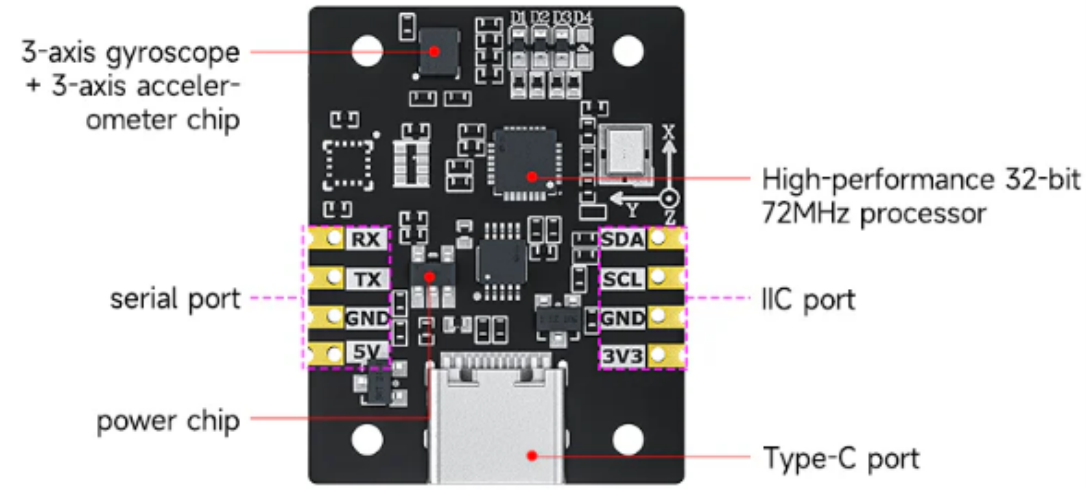
IMU Module Introduction

High-precision IMU inertial measurement units provide comprehensive attitude sensing solutions, including 6-axis, 9-axis, and 10-axis models. All three models feature a built-in high-performance 32-bit 72MHz processor, supporting real-time attitude calculation and dynamic compensation. With a data update rate of up to 100Hz, they offer fast response and stable output. They support IIC and serial communication, are compatible with microcontrollers and Linux controllers, and seamlessly integrate with the ROS system, making them suitable for a wide range of high-performance scenarios such as robotics, drones, and intelligent navigation.

1. Version Introduction

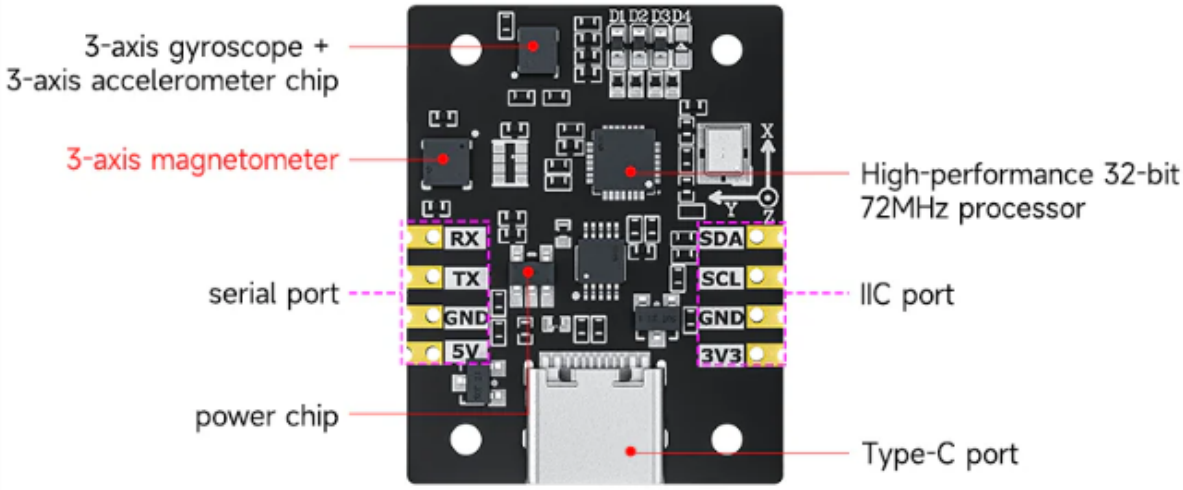
6-Axis Version

3-Axis Accelerometer + 3-Axis Gyroscope



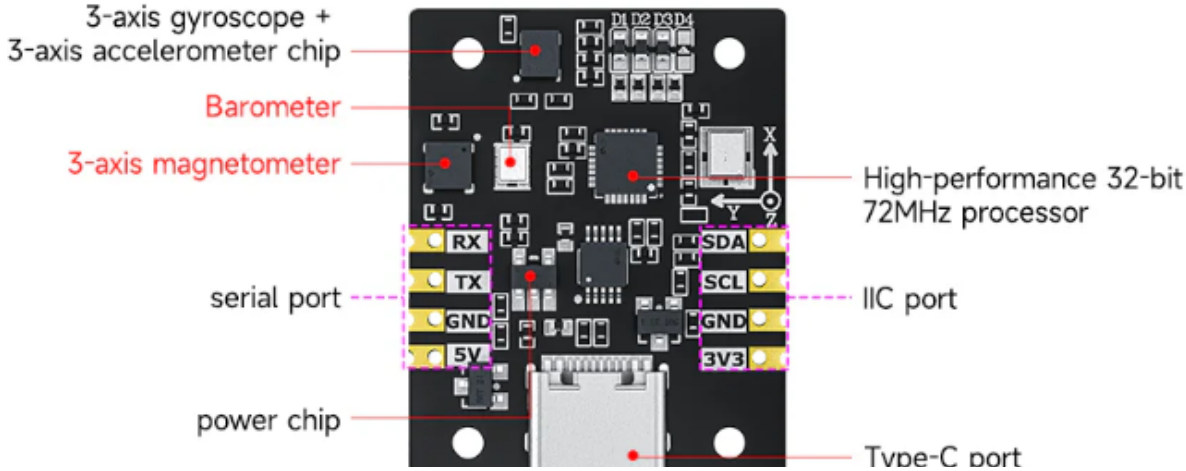
9-Axis Version

3-Axis Accelerometer + 3-Axis Gyroscope + 3-Axis magnetometer



10-Axis Version

3-Axis Accelerometer + 3-Axis Gyroscope + 3-Axis magnetometer + Barometer



Pin Function Description

SDA	I2C - Serial Data Line
SCL	I2C - Serial Clock Line
GND	Ground
5V	5V
RX	Serial Port - Data Receive Pin
TX	Serial Port - Data Transmit Pin
GND	Ground
5V	5V

2. Basic Module Parameters

Basic Specifications

Parameters	Remark
Serial port baud rate	115200bps
Serial port output frequency	Default 25Hz, adjustable from 10Hz to 100Hz
IIC clock rate	100KHz
Output content	3-axis acceleration, 3-axis angular velocity, 3-axis angle, 3-axis magnetic field, air pressure, altitude, temperature, quaternion (*Note: Red text only for the 9-axis and 10-axis versions, blue text only for the 10-axis version)
Startup time	5000ms
Operating temperature	-40°C~+85°C
Storage temperature	-40°C~+100°C
Shock resistance	20kg（Bare board）
Support devices	PC, Raspberry Pi, Jetson series, RDK series, and other Linux controllers STM32, MSPM0, ESP32, Pico, Arduino, and other MCU controllers
Working voltage	5V or 3.3V
Working current	11mA
Working current	24.5mm*31mm
Weight	3.9g
Weight	ROS1/ROS2

3. Sensor Parameters

Accelerometer Parameters

Parameters	Conditions	Typical values
Range		16g
Resolution	±16g	0.0005(g/LSB)
RMS noise	Bandwidth=100Hz	1.0mg-RMS
Temperature drift	-40°C~+85°C	±0.15mg/°C
Bandwidth		12.5~1600Hz

Gyroscope Parameters

Parameters	Conditions	Typical values
Range		±2000°/s
Resolution	±2000°/s	0.061(°/s)/(LSB)
RMS noise	Bandwidth=100Hz	0.07°/s-RMS
Temperature drift	-40°C~+85°C	0.015°/s/°C
Bandwidth		12.5~1600Hz

Magnetometer Parameters

Parameters	Conditions	Typical values
Range		±8Gauss
Resolution	±8Gauss	0.244mGauss/LSB

Barometer Parameters

Parameters	Conditions	Typical values
Range		300~2000hPa
RMS noise	Relative accuracy	1Pa-RMS
Relative accuracy		±0.12hPa

Pitch/Roll Parameters

Parameters	Conditions	Typical values
Range		X:±180°, Y:±90°
Resolution	Horizontal position	0.0055°

Yaw Parameters

Parameters	Conditions	Typical values
Range		Z:±180°
Resolution	Horizontal position	0.0055°

4. Size Parameters