UNIT BMI270 Module Product Brief

6-axis Inertial Sensor Module with I2C or SPI Interface and Low Power Design

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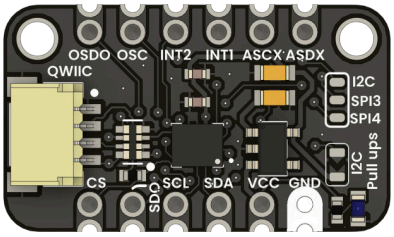
Introduction

The UNIT BMI270 is a 6-axis inertial measurement module that integrates a 3-axis accelerometer and a 3-axis gyroscope. Designed for low power consumption and high performance, it provides motion and gesture detection capabilities for embedded systems. The module supports I2C and SPI interfaces and includes configurable interrupts for advanced motion detection applications.



Functional Description

The BMI270 sensor module combines a 16-bit accelerometer and a 16-bit gyroscope to deliver precise measurements of linear acceleration and angular velocity. It is highly suitable for applications requiring accurate motion tracking. The module allows flexible communication with microcontrollers via selectable I2C or SPI interfaces. Auxiliary and interrupt pins are available for gesture, activity, or tap detection, enhancing its integration in wearables, robotics, and interactive systems.

Electrical Characteristics

- Operating voltage: 3.3V (typical)
- Communication interfaces: I2C (up to 1 MHz), SPI (up to 10 MHz)
- Accelerometer range: +/-2g / +/-4g / +/-8g / +/-16g
- Gyroscope range: +/-125 deg/s to +/-2000 deg/s
- Low current consumption: approx. 850 uA in full operation
- Interrupt output: Active-low, open-drain
- Logic level: 3.3V compatible

Features

- 6-axis motion sensing (accelerometer + gyroscope)
- Low power consumption suitable for battery-powered applications
- Selectable I2C or SPI digital communication
- 16-bit resolution for both sensors
- Configurable motion and gesture interrupts
- Auxiliary pins for extended functionality
- Compact form factor for space-limited designs

Applications

- Activity monitoring and fitness tracking
- Gesture detection and wake-on-motion
- Game controller orientation sensing
- Package motion and shock detection
- Navigation support in mobile robotics
- Smart home device triggering via motion

Settings

Interface Overview

Interface	Signals / Pins	Typical Use
I2C	SDA, SCL, SDO	Standard I2C communication
SPI	SCK, MOSI, MISO, CS	High-speed SPI communication
Interrupts	INT1, INT2	Motion detection, tap, activity alerts

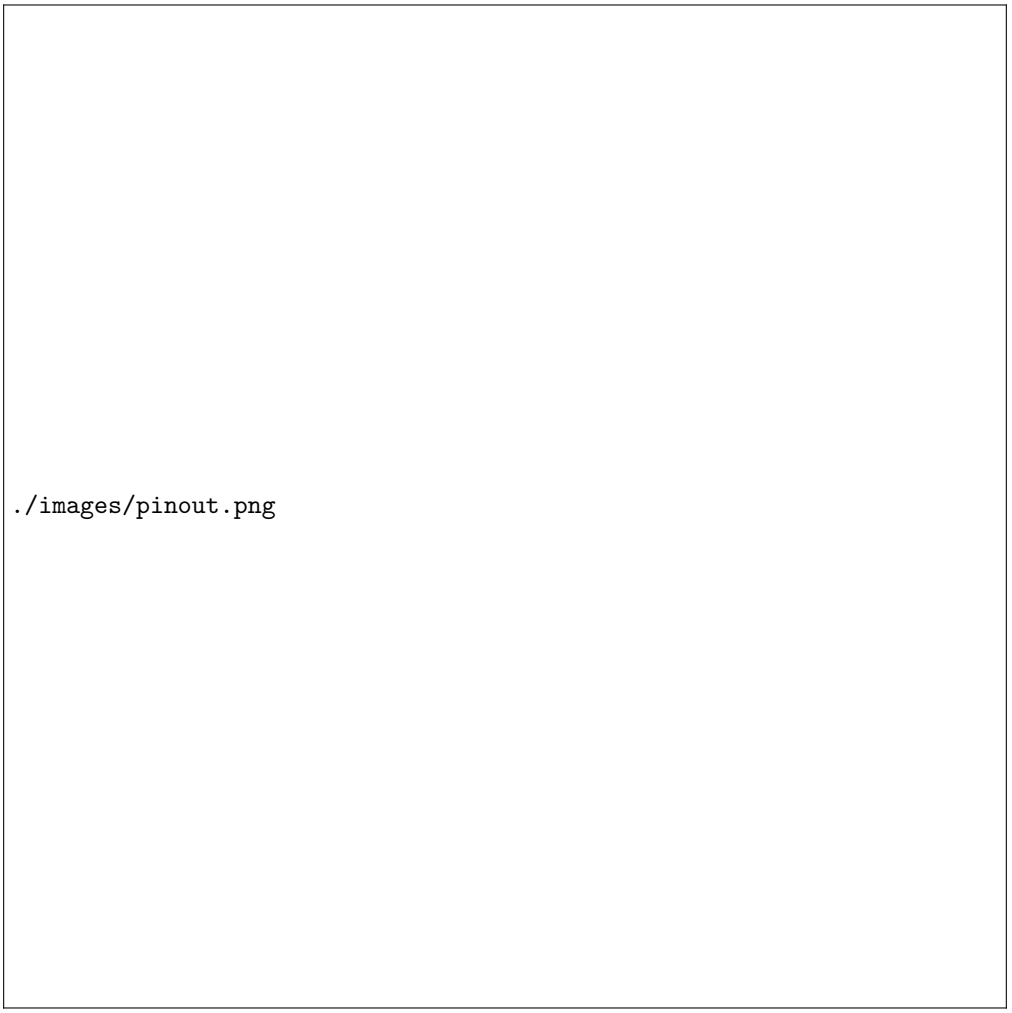
Supported Pins

Symbol	I/O	Description
SDA	I/O	I2C serial data
SCL	I	I2C serial clock
CS	I	SPI chip select (active low)
SDO	I/O	SPI MISO / I2C address configuration
INT1	O	Interrupt output for motion events
INT2	O	Additional interrupt output

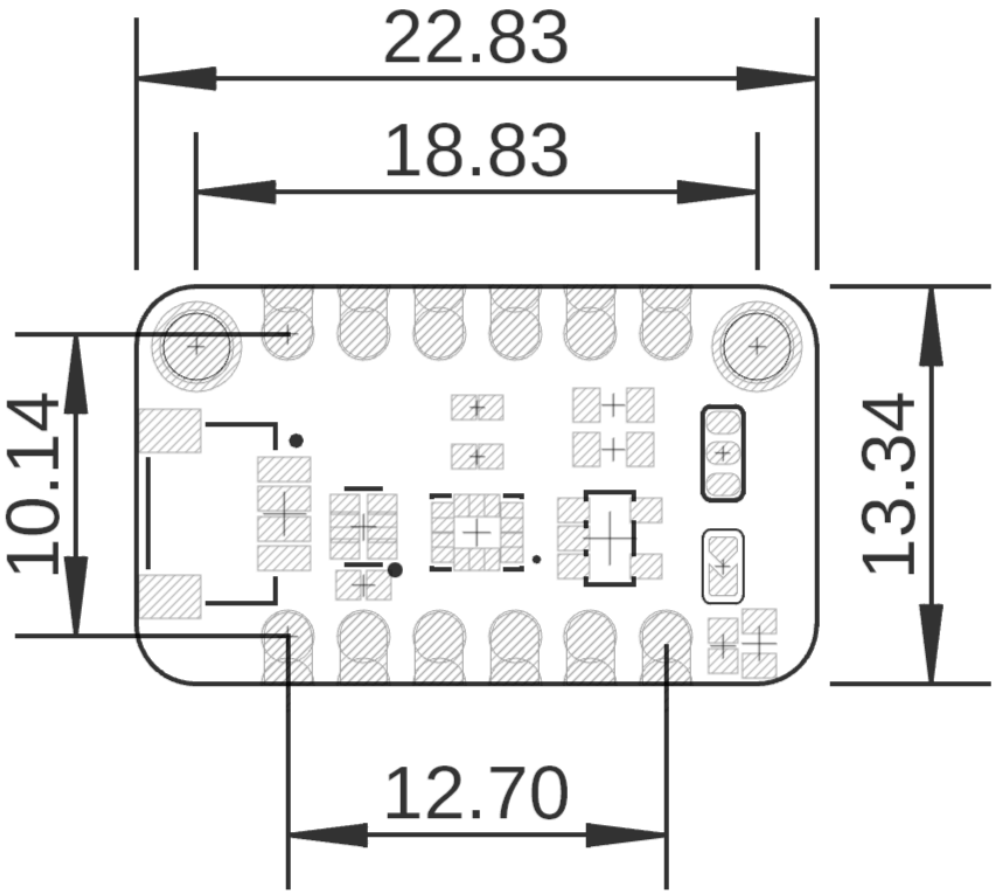
Pin & Connector Layout

PIN	Description
VCC	MCU logic voltage (3.3V)
GND	Ground
SDA	I2C data line
SCL	I2C clock line
SDO	SPI MISO / I2C address select
CS	SPI chip select
INT1	Interrupt output 1
INT2	Interrupt output 2

Block Diagram



Dimensions



Mechanical dimensions in millimeters

Usage

- Arduino and ESP32 boards (via I2C/SPI)
- MicroPython
- Inertial navigation algorithms

Downloads

- Schematic PDF

Purchase

- Buy from UNIT Electronics