

GY-25A

Generic GY-25A High-Precision Dual-axis Tilt Sensor Module

INSTRUCTION MANUAL

1. Product Overview

The Generic GY-25A is a high-precision dual-axis tilt detection sensor module designed for various electronic applications requiring accurate inclination measurement. This module provides both analog voltage output for X and Y axes and supports serial communication for data acquisition. It is a compact solution for dynamic inclination sensing, serving as an alternative to modules like the SCA60C.

Key features include:

- Dual-axis tilt detection (X and Y axes).
- High precision measurement.
- Analog voltage output for inclination.
- Serial port communication for data reading.
- Wide power supply voltage range (3.3V-5V).

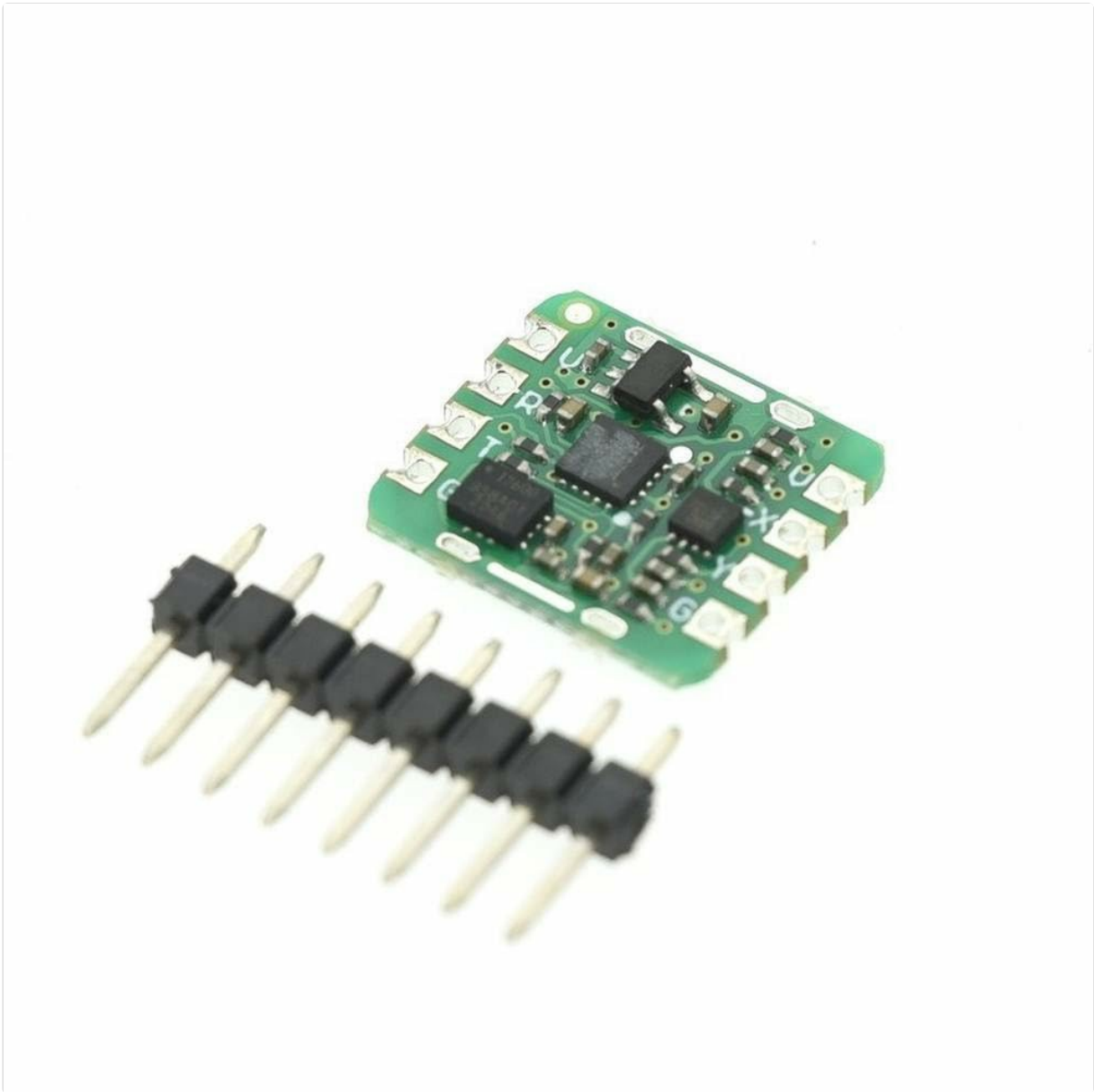


Figure 1: The GY-25A Dual-axis Tilt Sensor Module shown with its accompanying pin headers. This image provides a general view of the module's compact size and the connection points.

2. Setup and Connection

Proper connection of the GY-25A module is crucial for its functionality. Refer to the pinout diagram and descriptions below for correct wiring.

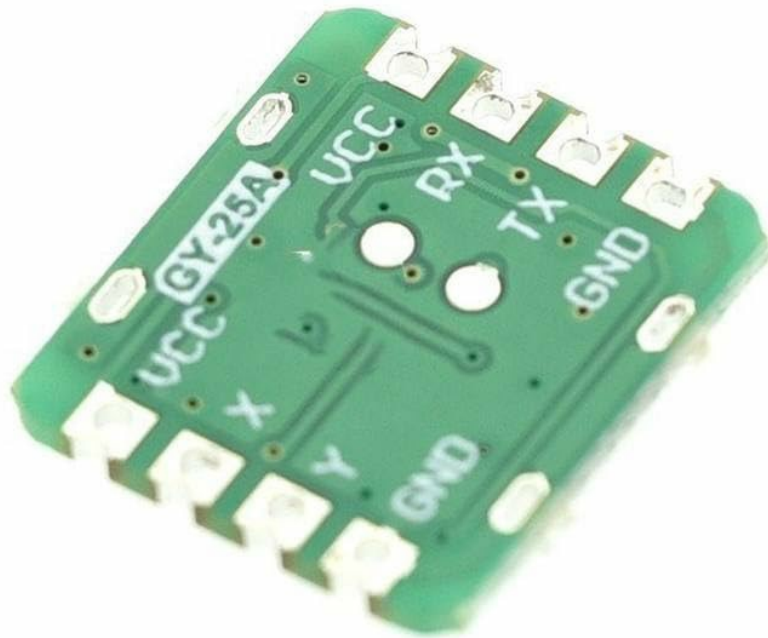


Figure 2: Bottom view of the GY-25A module, clearly showing the labeled pins for power, communication, and analog outputs. This view is essential for identifying connection points.

2.1 Pinout Description

Pin	Description
VCC	Power Supply Input (3.3V - 5V)
GND	Ground Connection
RX	Serial Data Receive (Connect to microcontroller TX)
TX	Serial Data Transmit (Connect to microcontroller RX)
X	Analog Output for X-axis Tilt
Y	Analog Output for Y-axis Tilt

2.2 Power Supply

Connect the **VCC** pin to a stable power source between 3.3V and 5V. Connect the **GND** pin to the system's ground. Ensure the power supply is clean and within the specified voltage range to prevent damage and

ensure accurate readings.

2.3 Mounting

The module is designed for surface mounting. Secure the module firmly to the desired surface to ensure stable and accurate tilt measurements. Avoid mounting in locations subject to excessive vibration or extreme temperature fluctuations.

3. Operating Instructions

The GY-25A module offers two primary methods for reading tilt data: analog voltage output and serial communication.

3.1 Analog Output Reading

The module provides analog voltage outputs on the **X** and **Y** pins, corresponding to the tilt angles along each axis. These outputs can be read using an Analog-to-Digital Converter (ADC) on a microcontroller.

- **X-axis Voltage Output:** 0V to 3.3V, corresponding to a tilt range of ± 180 degrees. When the module is placed horizontally with the chip facing upwards, the X-axis output is 0V.
- **Y-axis Voltage Output:** 0V to 3.3V, corresponding to a tilt range of ± 90 degrees. When the module is placed horizontally with the chip facing upwards, the Y-axis output is 0V.

To convert the analog voltage to an angle, calibration may be required based on your specific application and ADC resolution. A linear relationship typically exists between the voltage output and the tilt angle within the specified range.

3.2 Serial Communication

The GY-25A module also supports serial communication for reading tilt data. Connect the **TX** pin of the module to the **RX** pin of your microcontroller, and the **RX** pin of the module to the **TX** pin of your microcontroller. Configure your microcontroller's serial port with the appropriate baud rate (refer to the module's datasheet or typical serial communication settings for similar modules, often 9600 or 115200 baud) to receive data packets containing tilt information.

This method can provide more precise or formatted data compared to raw analog readings, depending on the module's internal firmware. Consult the "network disk data" mentioned in the product description for detailed serial communication protocols and data formats, if available.

4. Specifications

The following table details the technical specifications of the GY-25A module:

Feature	Value
Model Number	GY-25A
Power Supply Voltage	3.3V - 5V DC
Output Type	Analog, Serial Port
X-axis Output Range	0V - 3.3V (corresponds to ± 180 degrees)
Y-axis Output Range	0V - 3.3V (corresponds to ± 90 degrees)
Module Dimensions	15 mm x 13.3 mm

cleaners.

6. Troubleshooting

If you encounter issues with your GY-25A module, consider the following troubleshooting steps:

- **No Output/Incorrect Readings:**

- Verify power supply connections (VCC and GND) and ensure the voltage is within 3.3V-5V.
- Check all wiring for continuity and correct pin connections.
- Ensure the module is securely mounted and not experiencing unintended movement.
- For analog output, confirm your ADC is configured correctly and its reference voltage matches your system.
- For serial communication, check baud rate settings and ensure TX/RX lines are correctly crossed.

- **Unstable Readings:**

- Check for electrical noise in the power supply. Add decoupling capacitors if necessary.
- Ensure the module is isolated from strong electromagnetic interference.
- Verify the physical stability of the mounting surface.

- **Module Not Responding via Serial:**

- Double-check the TX/RX connections.
- Confirm the baud rate and other serial port settings (data bits, parity, stop bits).
- Ensure the microcontroller's serial port is functioning correctly.

7. Warranty and Support

Information regarding specific warranty terms or direct manufacturer support for this Generic product is not available in the provided product data. For any issues or inquiries, please refer to the retailer or vendor from whom the product was purchased. They may be able to provide further assistance or direct you to relevant resources, such as the "network disk data" mentioned in the product description for detailed technical information.