Teyleten Robot KY-023

Teyleten Robot KY-023 Dual-axis XY Joystick Module User Manual

Model: KY-023 | Brand: Teyleten Robot

1. Introduction

This manual provides detailed instructions for the setup, operation, and maintenance of the Teyleten Robot KY-023 Dual-axis XY Joystick Module. This module is designed for use in various electronic projects, including those involving Arduino and Raspberry Pi, offering precise control and input capabilities.

2. Product Overview

The Teyleten Robot KY-023 is a dual-axis XY joystick module, commonly referred to as a PS2 game joystick module. It functions as a control lever sensor, providing analog output for X and Y axis movements and a digital output for a push-button switch. The module incorporates a bi-directional 10K resistor for each axis, where the resistance value changes with the rocker's direction. When powered by 5V, the initial X and Y readout voltage is approximately 2.5V. Moving the joystick in one direction increases the readout voltage up to 5V, while moving it in the opposite direction decreases the voltage down to 0V.

Key features include:

- Standard electronic building blocks interface.
- 2.54mm pin interface lead for easy connection.
- Durable metal joystick construction.
- Analog X and Y axis output.
- Digital switch output (when pressed).

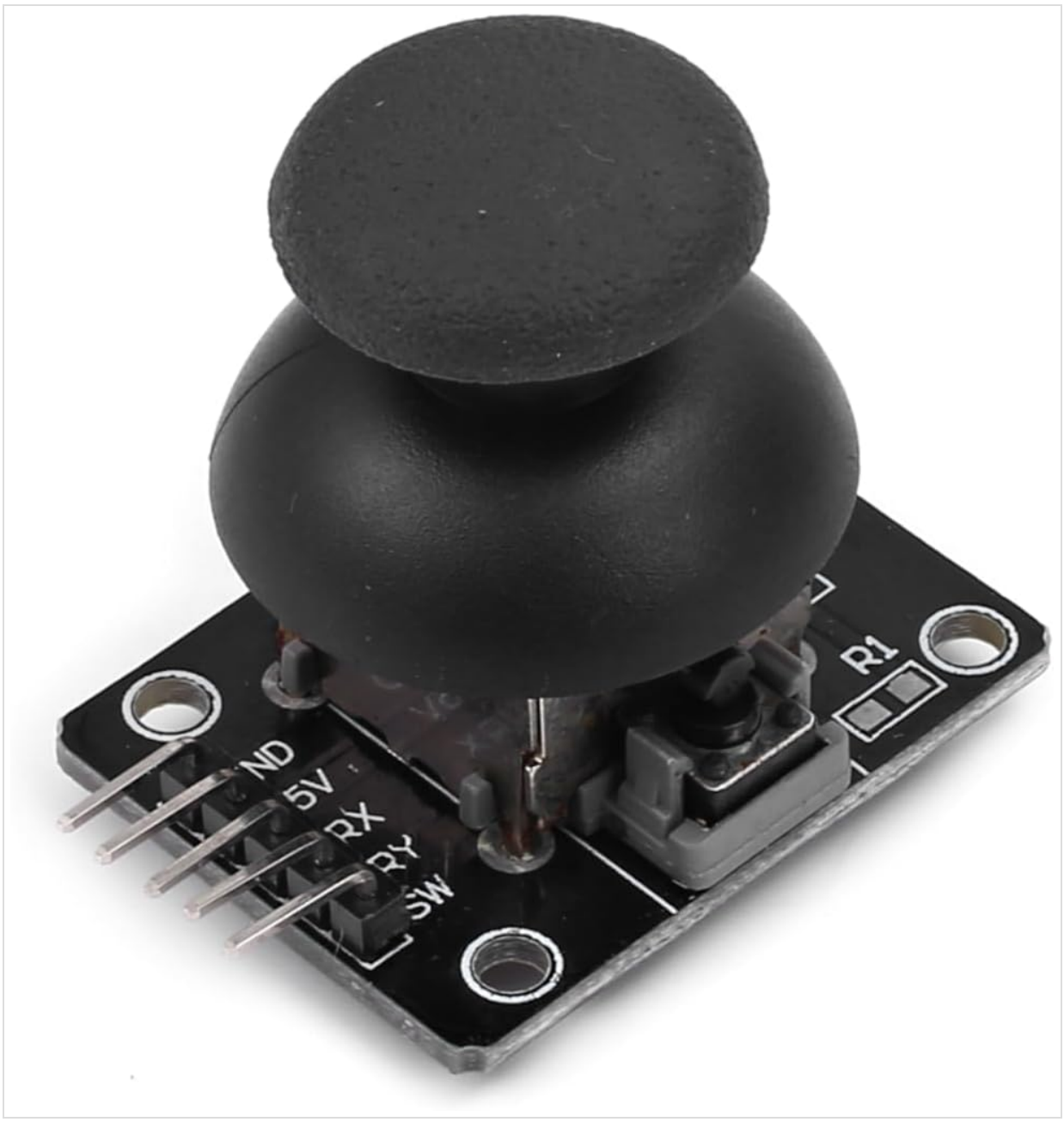

Figure 2.1: Top view of the KY-023 Joystick Module, highlighting the pin connections (GND, 5V, RX, RY, SW) and the joystick cap.

3. Package Contents

Each package contains the following items:

- 5 x Teyleten Robot Dual-axis XY Joystick Module

4. Setup

The KY-023 module is compatible with microcontrollers such as Arduino and Raspberry Pi. Follow these general steps for connection:

1. **Power Connection:** Connect the '5V' pin on the joystick module to the 5V power supply of your microcontroller. Connect the 'GND' pin to the ground (GND) of your microcontroller.
2. **Analog Axis Connection:** The 'RX' pin provides the analog output for the X-axis, and the 'RY' pin provides the analog output for the Y-axis. Connect these pins to analog input pins on your microcontroller (e.g., A0 and A1 on Arduino).
3. **Switch Connection:** The 'SW' pin provides the digital output for the push-button switch function. Connect this pin to a

digital input pin on your microcontroller. Note that for the switch function to operate, a resistor (e.g., 10k Ohm) must be placed across the 'R1' pads on the module if it is not already present. This completes the circuit from the +5V pin, through the resistor, to the SW pin when the switch is depressed.

Figure 4.1: Side view of the KY-023 Joystick Module, illustrating the potentiometers for X and Y axis control and the R1 pads for the switch.

5. Operating Instructions

Once connected to your microcontroller and programmed, the joystick module provides input as follows:

- **X-axis Movement:** Moving the joystick left or right will change the analog voltage output on the 'RX' pin. The voltage will vary from approximately 0V to 5V, with 2.5V being the center position.
- **Y-axis Movement:** Moving the joystick up or down will change the analog voltage output on the 'RY' pin. The voltage will vary from approximately 0V to 5V, with 2.5V being the center position.
- **Button Press:** Pressing the joystick cap downwards activates the integrated push-button switch. This will provide a digital signal (HIGH or LOW, depending on your pull-up/pull-down configuration) on the 'SW' pin.

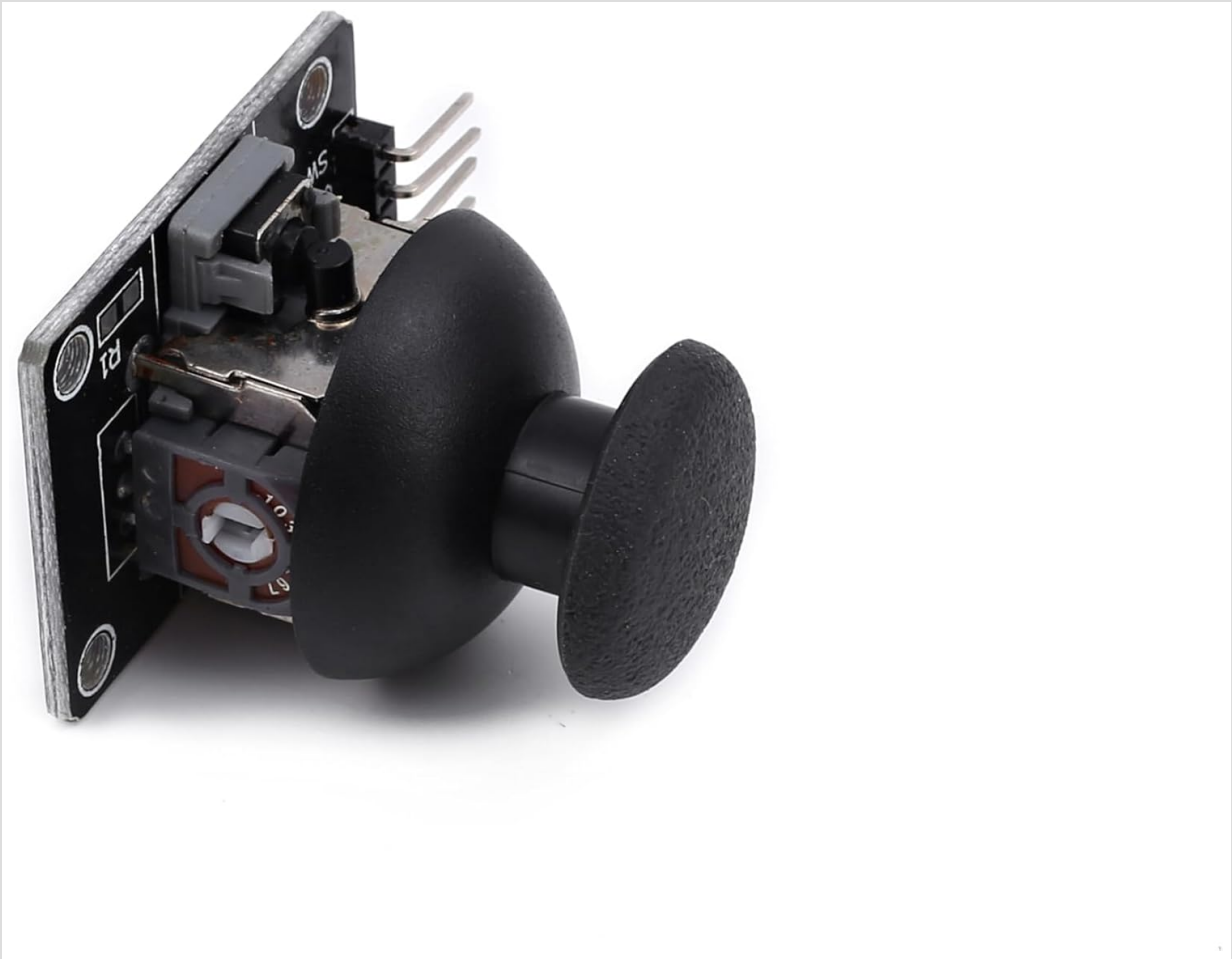

Figure 5.1: Angled view of the KY-023 Joystick Module, demonstrating the range of motion for the joystick lever.

6. Technical Specifications

Specification	Value
Brand	Teyleten Robot
Model Name	KY-023
Connectivity Technology	PS2
Compatible Devices	Arduino, Raspberry Pi
Power Supply	5V DC
X/Y Axis Resistor	10K Ohm (Bi-directional)
X/Y Readout Voltage (Center)	~2.5V (with 5V supply)
X/Y Readout Voltage (Range)	0V to 5V (with 5V supply)
Included Components	5 x Teyleten Robot Dual-axis XY Joystick Module

7. Troubleshooting

- **No X/Y Axis Movement Detected:**
  - Verify that the 5V and GND connections are correct and stable.
  - Ensure 'RX' and 'RY' pins are connected to analog input pins on your microcontroller.
  - Check your code to ensure analogRead() functions are correctly implemented for the assigned pins.

- **Switch (Button) Not Working:**
    - Confirm the 'SW' pin is connected to a digital input pin.
    - **Important:** Inspect the module for the 'R1' pads. If a resistor is not present across these pads, you will need to solder a 10k Ohm resistor (or similar value) to enable the switch functionality.
    - Ensure your code correctly reads the digital input from the 'SW' pin, including proper pull-up or pull-down resistor configuration if necessary.
- **Noisy Signals / Unstable Readings:**
    - Ensure all connections are secure and free from loose wiring.
    - Consider adding small capacitors (e.g., 0.1uF) between the analog input pins and ground on your microcontroller to filter out electrical noise.
    - Ensure your power supply is stable and free from fluctuations.

Figure 7.1: Bottom view of the KY-023 Joystick Module, showing the circuit board and solder points, including the R1 pads.

8. Maintenance

The Teyleten Robot KY-023 Joystick Module is designed for durability. To ensure its longevity and optimal performance:

- Keep the module clean and free from dust and debris. Use a soft, dry cloth for cleaning.
- Avoid exposing the module to excessive moisture or extreme temperatures.
- Handle with care to prevent physical damage to the joystick lever or circuit board.
- Ensure proper ventilation if used in an enclosed project to prevent overheating of surrounding components.

9. Warranty and Support

For warranty information and technical support, please refer to the documentation provided at the time of purchase or contact Teyleten Robot customer service through their official channels. Keep your purchase receipt for warranty claims.