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DollaTek CP018624

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Model: CP018624

INTRODUCTION

The DollaTek AS5600 is a high-precision 12-bit magnetic encoder module designed for non-contact magnetic induction angle measurement. This module is primarily utilized to determine the rotation angle of stepper motors and other rotational systems. It offers versatile output modes, including IIC, PWM, and voltage output, and incorporates an intelligent low-power consumption mode for efficient operation. Constructed from high-quality KB-A grade FR-4 fiberglass board with a thickness of 1.6 mm, the module ensures durability and a flat, robust surface.

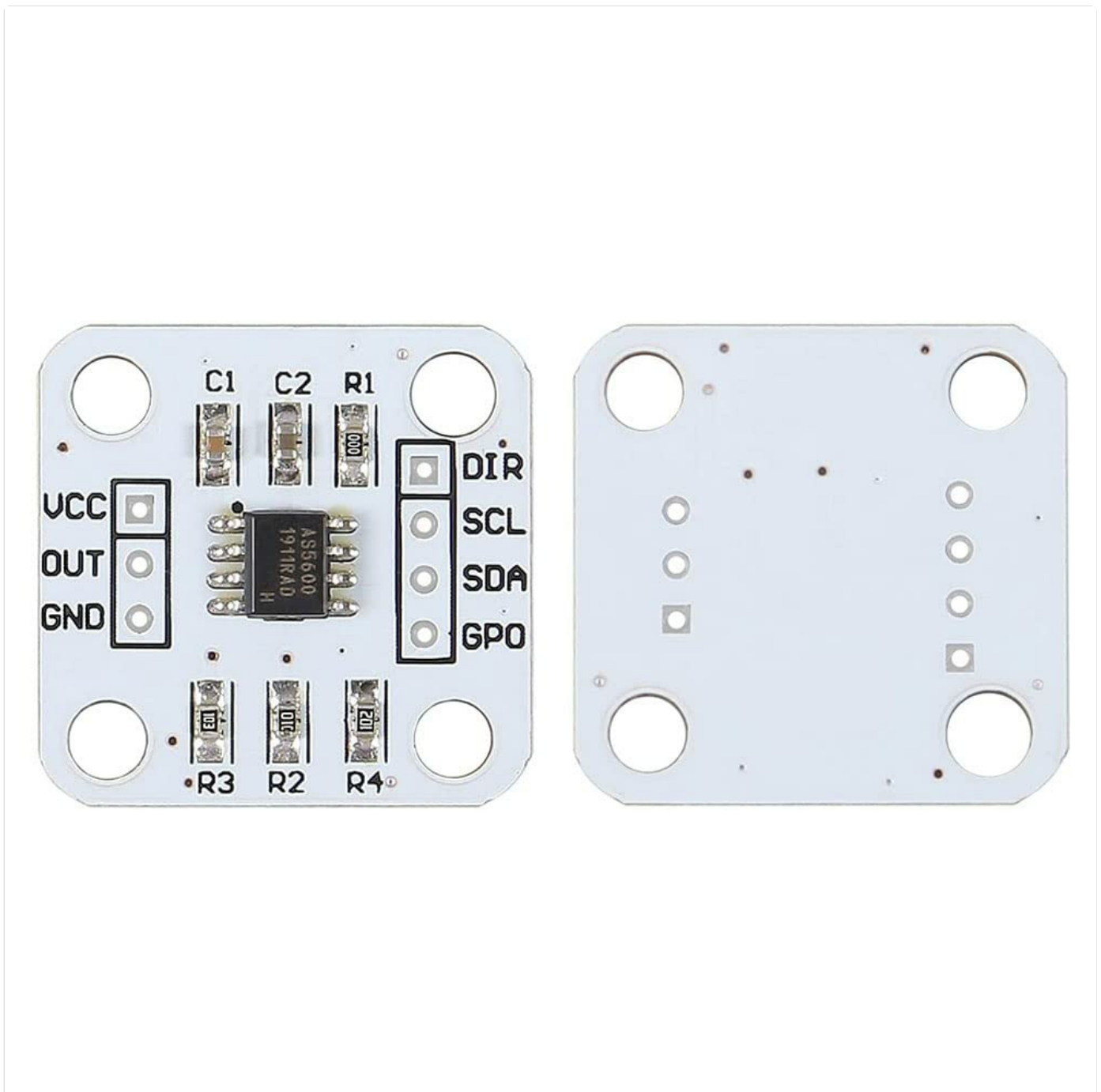


Figure 1: Front and back view of the AS5600 magnetic encoder module. The front shows the AS5600 chip, capacitors, resistors, and pin headers for VCC, OUT, GND, DIR, SCL, SDA, and GPO. The back is a plain white PCB with mounting holes.

SETUP

Proper setup is crucial for accurate angle measurement. Follow these steps to integrate the AS5600 module into your system:

- 1. Mounting:** Secure the AS5600 module to your desired location using the four mounting holes provided on the board. Ensure it is stable and free from vibrations.
- 2. Magnet Placement:** The module operates by sensing a magnetic field. Position a small, strong magnet directly above the center of the AS5600 chip. The magnet must be very close to the sensor to ensure reliable and accurate readings, minimizing noise and fluctuating values. The magnet's field should be across its width for optimal interaction with the sensor.
- 3. Power Connection:** Connect the VCC pin to a 3.3V power supply and the GND pin to the system's ground.
- 4. Output Connection:** Depending on your desired output mode, connect the OUT pin for PWM or analog voltage output. For IIC communication, connect the SCL (IIC communication clock line) and SDA (IIC communication data line) pins to your microcontroller.

5. **Direction and Mode Selection:** The DIR pin selects the direction of rotation polarity. Grounding DIR causes clockwise values to increase, while connecting DIR to VCC causes clockwise values to decrease. The GPO pin is used for mode selection (internal pull-up; grounding GPO activates programming mode B).

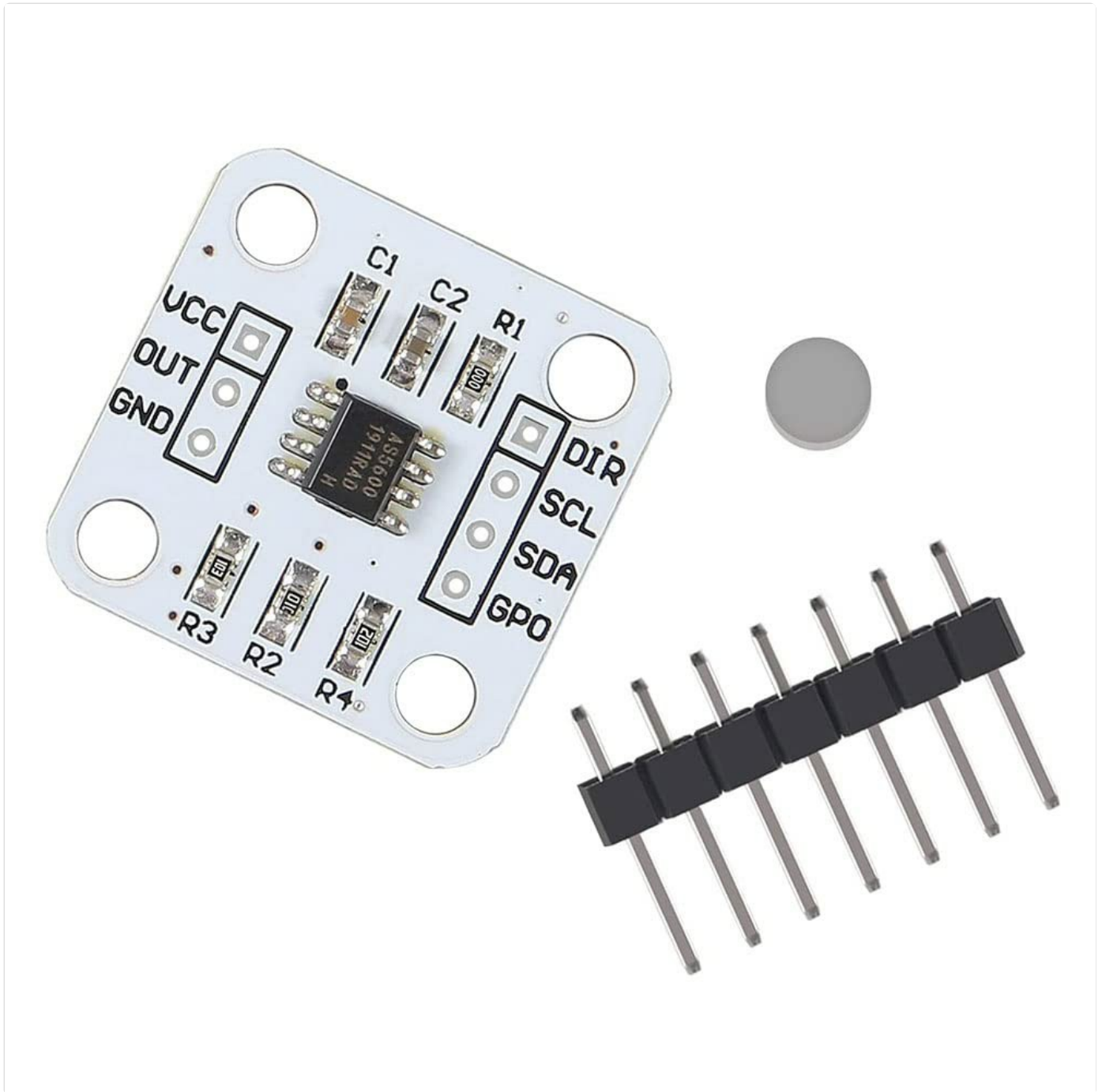


Figure 2: The AS5600 module shown with a set of header pins and the recommended small magnet for sensing. The magnet should be placed directly over the central chip.

OPERATING INSTRUCTIONS

Once the module is correctly set up, you can begin operating it to measure angles. The AS5600 supports multiple output configurations:

- **IIC (I2C) Communication:** This is a digital interface for reading angle data. Connect the SCL and SDA pins to your microcontroller's I2C bus. You can then use appropriate libraries or code to read the 12-bit angle value from the sensor.
- **PWM Output:** The OUT pin can provide a Pulse Width Modulation signal where the duty cycle is proportional to the measured angle. This can be read by a microcontroller's PWM input.
- **Analog Voltage Output:** The OUT pin can also provide an analog voltage proportional to the measured angle. This can be

read by an Analog-to-Digital Converter (ADC) on your microcontroller.

The AS5600 also features an intelligent low-power consumption mode, which automatically reduces power usage when the sensor is idle, contributing to energy efficiency.

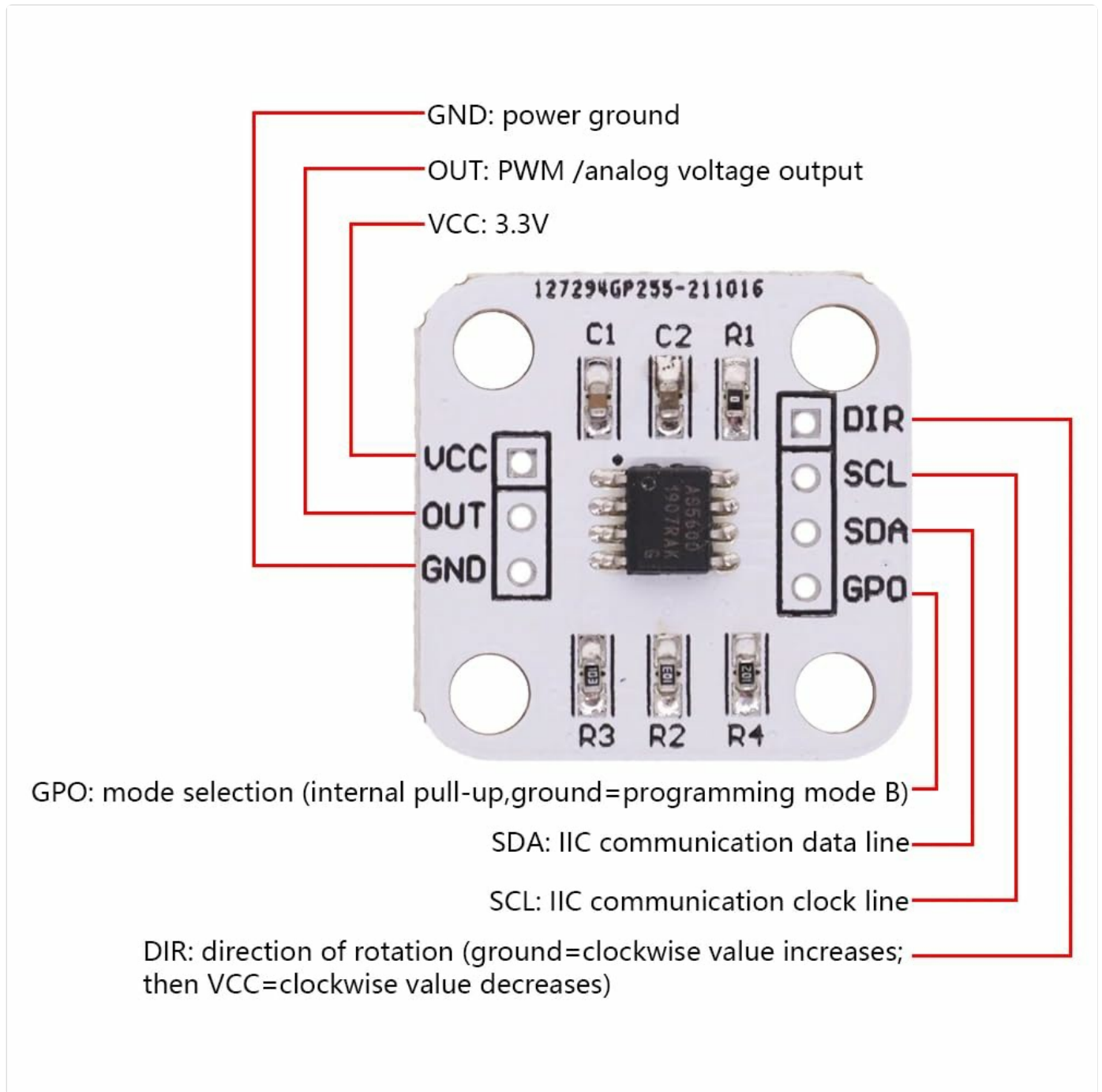


Figure 3: Detailed pinout diagram for the AS5600 module, illustrating connections for GND (power ground), OUT (PWM/analog voltage output), VCC (3.3V), GPO (mode selection), SDA (IIC data line), SCL (IIC clock line), and DIR (direction of rotation).

MAINTENANCE

The DollaTek AS5600 module is designed for durability and requires minimal maintenance. To ensure its longevity and optimal performance:

- Keep the module clean and free from dust, dirt, and moisture. Use a soft, dry cloth for cleaning if necessary.
- Avoid exposing the module to strong external magnetic fields, as this can interfere with its operation and accuracy.
- Handle the module with care to prevent physical damage to the PCB or components.
- Ensure all connections are secure and free from corrosion.

TROUBLESHOOTING

If you encounter issues with your AS5600 module, consider the following troubleshooting steps:

- **No Readings or Erratic Readings:**

- Verify that the magnet is positioned correctly and is very close to the AS5600 chip. A common issue is the magnet being too far away, leading to unreliable data.
- Check the power supply (VCC) to ensure it is a stable 3.3V.
- Inspect all wiring connections for proper contact and correct pin assignments (GND, VCC, OUT, DIR, SCL, SDA, GPO).

- **Incorrect Rotation Direction:**

- Adjust the connection of the DIR pin. Grounding DIR increases values clockwise, while connecting it to VCC decreases values clockwise.

- **Communication Issues (IIC):**

- Ensure your microcontroller's I2C bus is correctly configured and that the AS5600's I2C address is being targeted.
- Check for proper pull-up resistors on the SCL and SDA lines if not already integrated into your system or the module.

- **Physical Damage:**

- Visually inspect the module for any signs of physical damage, such as bent pins, cracked components, or burnt traces.

SPECIFICATIONS

Feature	Specification
Model Number	CP018624
Brand	DollaTek
Sensor Type	Magnetic Induction Angle Sensor
Resolution	12-bit
Output Modes	IIC, PWM, Voltage
Operating Voltage	3.3V (VCC)
Board Material	KB-A grade FR-4 Fiberglass
Board Thickness	1.6 mm
Module Dimensions	Approximately 23mm x 23mm (0.90in x 0.90in)
Package Dimensions	12.5 x 10 x 1 cm
Package Weight	10 grams

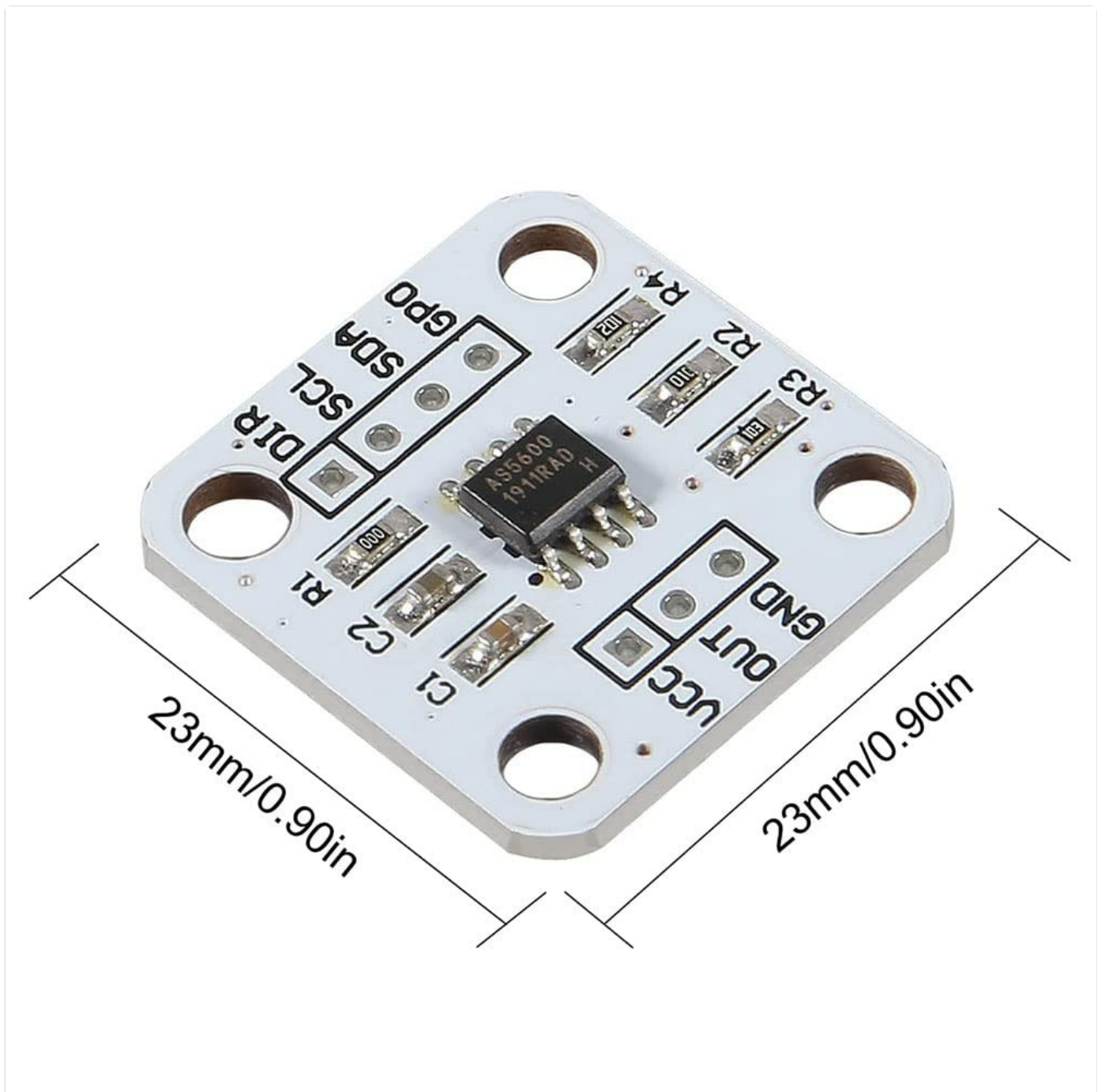


Figure 4: The AS5600 module with its approximate dimensions of 23mm x 23mm (0.90in x 0.90in) clearly marked.

WARRANTY INFORMATION

This DollaTek product comes with a limited warranty. For specific details regarding the warranty period, coverage, and terms, please refer to the official DollaTek website or contact their customer support directly. Please retain your proof of purchase for any warranty claims.

CUSTOMER SUPPORT

For further assistance, technical inquiries, or support regarding your DollaTek AS5600 magnetic encoder module, please visit the official DollaTek website. You may find additional resources, FAQs, and contact information for their support team there.