

Pteanecay 500737123

Pteanecay MT6701 Magnetic Encoder Module User Manual

Model: 500737123

1. INTRODUCTION

The Pteanecay MT6701 Magnetic Encoder Module is designed for precise position detection in various applications, including brushless motors. This module offers ABZ mode output with 1024 lines resolution and supports both PWM and I2C communication interfaces. It serves as a functional replacement for AS5600 modules. This manual provides essential information for the proper setup, operation, and maintenance of your MT6701 module.

2. PRODUCT OVERVIEW

The MT6701 module integrates a magnetic sensor and processing circuitry on a compact PCB. It is designed for robust performance in industrial and scientific applications.

Key Features:

- **Sensing Range:** 100mT
- **Sensor Type:** Magnetic Sensor
- **Function Type:** Position Detection
- **Output Modes:** ABZ mode 1024 lines, PWM, I2C

Module Components:

The module consists of the MT6701 chip, various passive components, and connection pads for power and communication. The board features clearly labeled pins for easy integration.

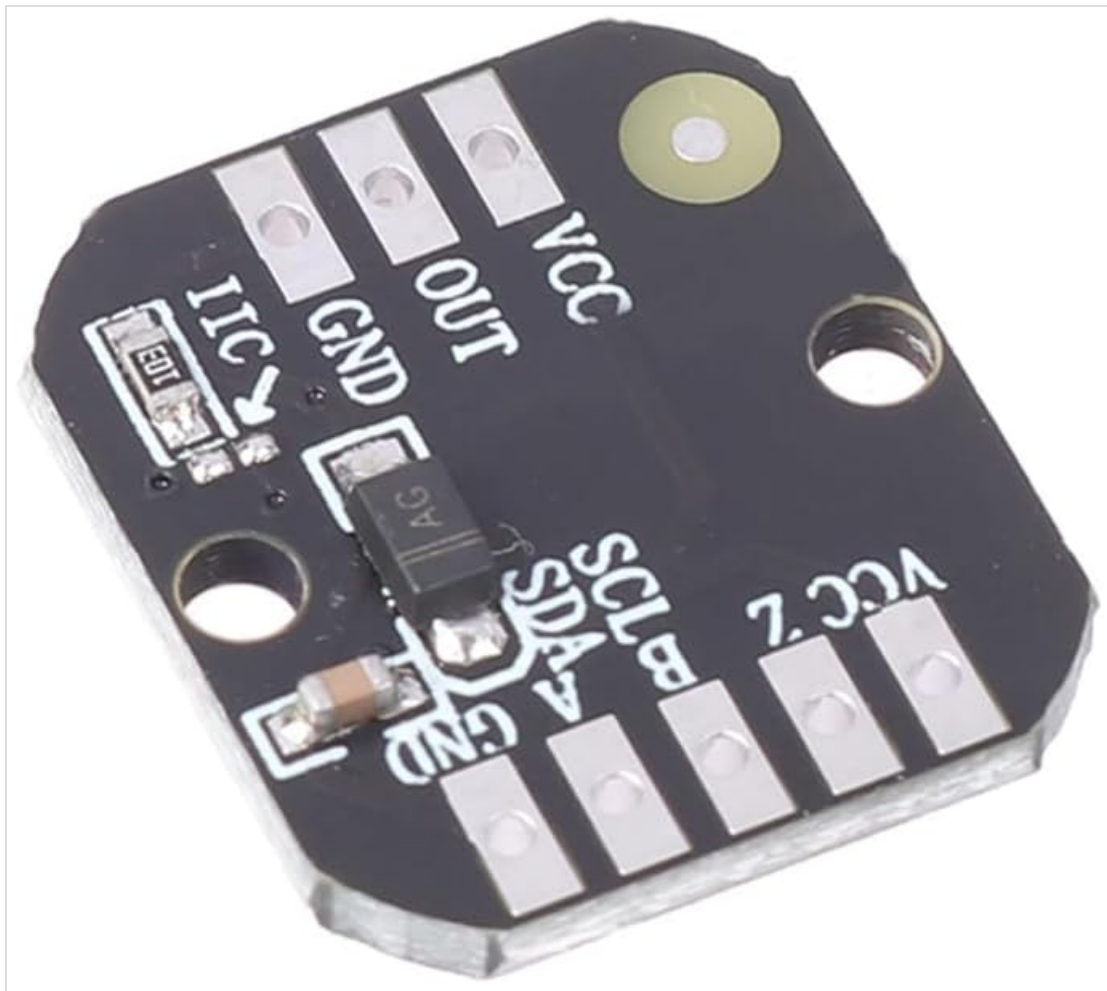


Figure 2.1: Top view of the MT6701 module showing pin labels (VCC, OUT, GND, IIC, SDA, SCL, A, B, Z) and the magnetic sensor area.

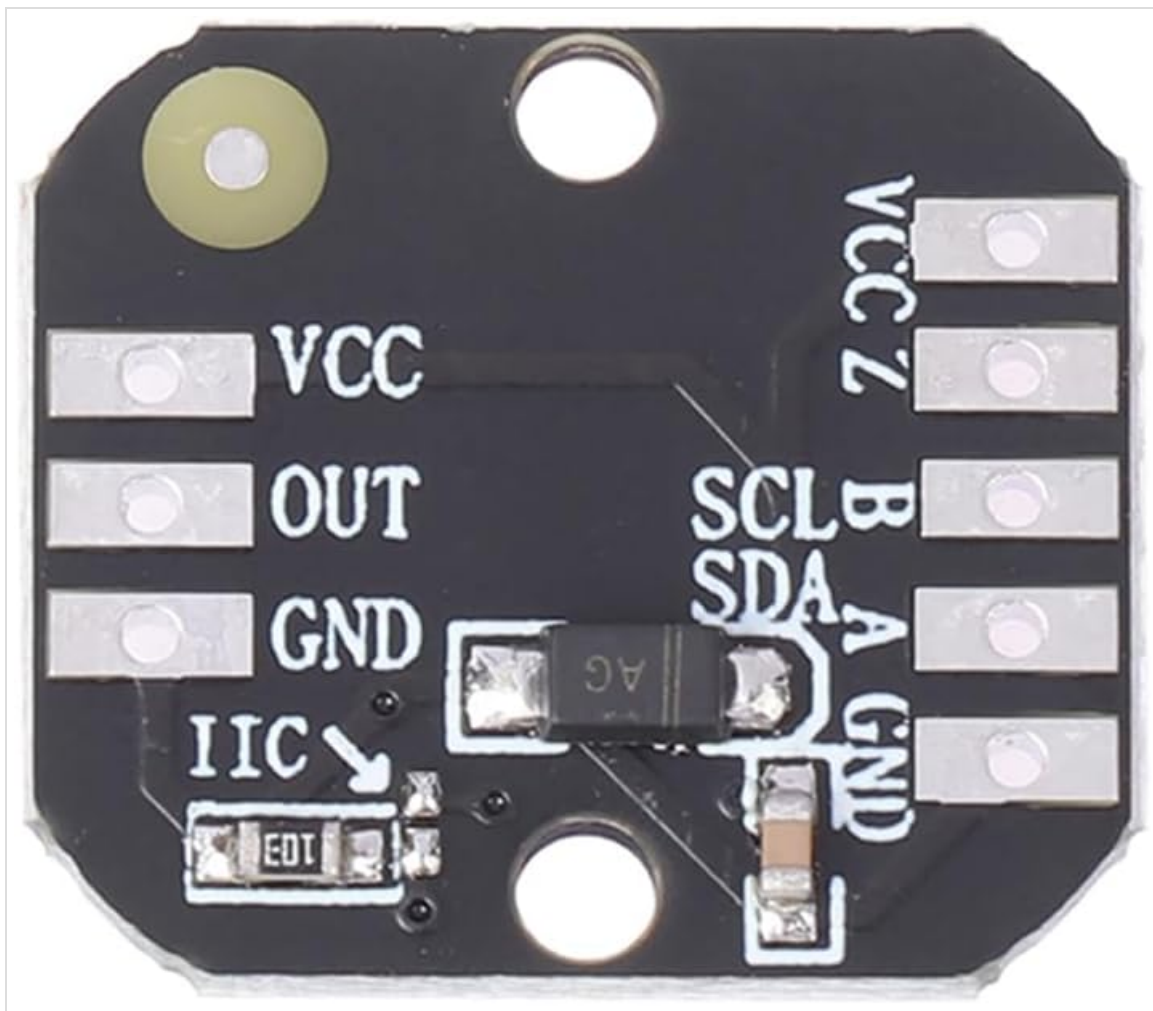


Figure 2.2: Top-down view of the MT6701 module, highlighting the MT6701 chip and the 'IIC' solder bridge for mode selection.

3. SETUP AND CONNECTION

Proper connection and configuration are crucial for the module's functionality. Ensure all connections are secure before applying power.

Pinout Description:

- **VCC:** Power supply input (typically 3.3V or 5V, refer to datasheet for exact range).
- **GND:** Ground connection.
- **OUT:** PWM output or other analog output depending on configuration.
- **SDA:** I2C Data line.
- **SCL:** I2C Clock line.
- **A, B, Z:** ABZ quadrature outputs (A and B for direction and pulses, Z for index pulse).
- **IIC:** Solder bridge for I2C/SPI mode selection.

Mode Selection (I2C vs. SPI):

The MT6701 module supports both I2C and SPI communication protocols. To select SPI mode, you must solder the bridge marked "IIC" on the board. If the bridge is not soldered, the module typically operates in I2C mode. When using SPI, the 'Z' pad functions as the Chip Select (CS) line.

Physical Installation:

The module is designed to fit within a 19mm diameter recess due to its chamfered corners. Ensure the magnetic target is properly aligned with the sensor for accurate readings. The board includes M2 screw holes for mounting.

4. OPERATING INSTRUCTIONS

Once the module is correctly wired and configured, it can provide position data through its selected interface.

ABZ Mode Operation:

In ABZ mode, the module outputs quadrature signals (A and B) which are phase-shifted by 90 degrees, allowing for direction detection and counting of rotational increments. The Z signal provides an index pulse, typically once per revolution, for absolute position referencing. The module provides 1024 lines of resolution in this mode.

SPI Communication:

For SPI communication, ensure the 'IIC' solder bridge is closed. Connect the 'Z' pad to your microcontroller's Chip Select (CS) pin. Use an SPI clock rate between 3MHz and 10MHz for optimal performance and to avoid unintended I2C mode activation, especially when multiple modules share the same clock and data lines.

I2C Communication:

If the 'IIC' solder bridge is open, the module operates in I2C mode. Connect SDA and SCL pins to your microcontroller's I2C bus. Refer to the MT6701 datasheet for specific I2C addresses and register maps to read position data.

5. SPECIFICATIONS

Product Dimensions	1.97 x 1.97 x 0.39 inches (50 x 50 x 10 mm)
Item Weight	0.071 ounces (2 grams)
Model Number	500737123
Brand	Pteanecay
Material	PCB, Copper
Sensing Range	100mT
Output Resolution	ABZ mode 1024 lines
Output Interfaces	PWM, I2C, ABZ (SPI via IIC bridge)

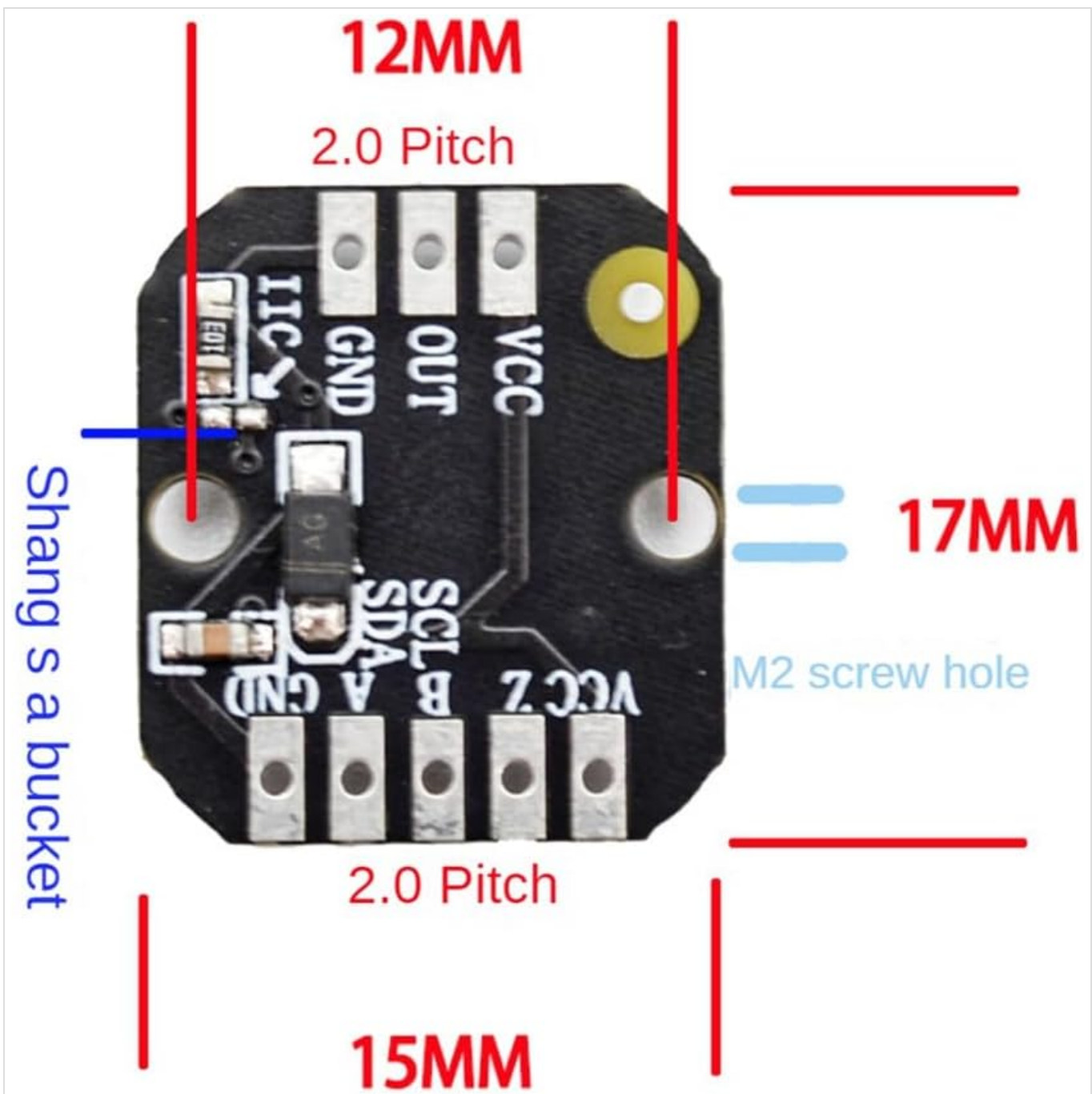


Figure 5.1: Dimensions of the MT6701 module, showing 12mm, 15mm, and 17mm measurements with 2.0 pitch and M2 screw holes.

6. TROUBLESHOOTING

If you encounter issues with your MT6701 module, consider the following troubleshooting steps:

- **No Output/Incorrect Readings:**

- Verify all power (VCC, GND) and communication lines are correctly connected and secure.
- Ensure the magnetic target is properly aligned with the sensor and within the optimal sensing range.
- Check the selected communication mode (I2C or SPI) and ensure the 'IIC' solder bridge is configured correctly for your intended mode.
- Confirm that your microcontroller's code is correctly configured for the chosen communication protocol (I2C address, SPI clock speed, chip select).

- **Intermittent Readings:**

- Check for loose connections or cold solder joints.
- Ensure the power supply is stable and within the module's specified voltage range.

- Minimize electromagnetic interference from nearby components or motors.
- **Physical Differences:** Note that different manufacturing batches may exhibit minor appearance differences. These variations do not affect the module's functionality.

7. MAINTENANCE

The MT6701 Magnetic Encoder Module is designed for durability and requires minimal maintenance. Follow these guidelines to ensure its longevity:

- **Cleanliness:** Keep the module free from dust, dirt, and moisture. Use a soft, dry brush or compressed air to gently clean the PCB if necessary. Avoid using liquid cleaners.
- **Handling:** Handle the module by its edges to avoid touching the electronic components directly. Static electricity can damage sensitive components.
- **Storage:** Store the module in a dry, anti-static environment when not in use.
- **Environmental Conditions:** Operate the module within its specified temperature and humidity ranges to prevent damage.

8. WARRANTY AND SUPPORT

Specific warranty details for the Pteanecay MT6701 Magnetic Encoder Module are not provided in this manual. For warranty claims, technical support, or further assistance, please contact your retailer or the manufacturer directly. Retain your proof of purchase for any warranty-related inquiries.

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