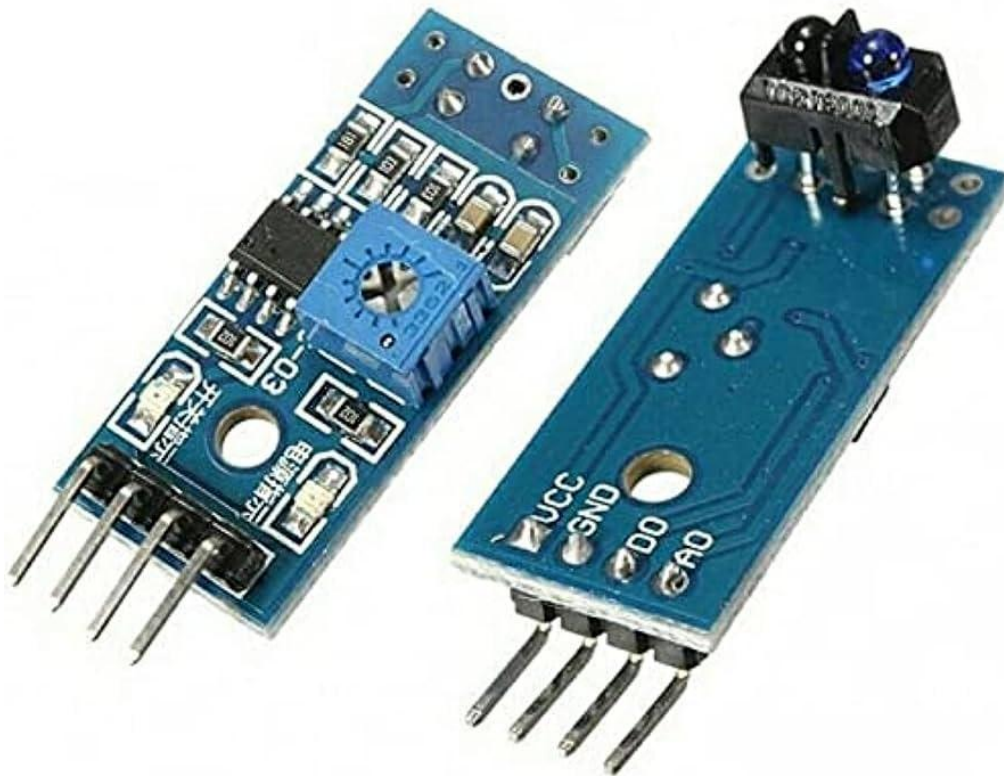


## TCRT5000 Tracking Line Follower Sensor 4 Pin



The **TCRT5000 Tracking Line Follower Sensor 4-Pin** is a high-performance infrared (IR) sensor module designed for robotics, automation, and embedded electronics projects. Compact, reliable, and easy to integrate, this sensor is widely used in line-following robots, obstacle detection systems, and smart automation devices. With its precise infrared sensing capabilities and robust design, it provides developers and hobbyists with a cost-effective solution for creating intelligent machines and automated systems.

### High-Precision Infrared Sensing

At the heart of the TCRT5000 sensor is a **paired infrared emitter and phototransistor**. The IR emitter sends out infrared light, while the phototransistor detects the reflected light from surfaces below. The sensor can differentiate between light and dark surfaces, making it ideal for line-following applications. Its high sensitivity ensures accurate detection of lines on a variety of surfaces, whether the lines are painted, taped, or printed.

## 4-Pin Configuration for Easy Integration

The TCRT5000 module features a **4-pin interface** consisting of **VCC, GND, OUT, and EN (Enable/Signal) pins**. This configuration allows easy connection to microcontrollers such as Arduino, Raspberry Pi, ESP32, or other development boards. The OUT pin provides digital signal output, while the EN pin allows users to enable or disable the sensor as needed. The 4-pin design simplifies wiring and programming for both beginners and advanced users.

## Versatile Applications

The TCRT5000 Tracking Sensor is highly versatile and can be used in a variety of applications, including:

- **Line-Following Robots:** Detect and follow black or white lines on floors for robotics competitions, educational projects, and hobby robots.
- **Obstacle Detection:** Integrate into small robots or moving platforms to detect edges, gaps, or boundaries.
- **Automation Projects:** Implement as a trigger for automated mechanisms, such as conveyor belts, sorting machines, or alarm systems.
- **Educational Projects:** Learn about infrared sensing, signal processing, and robotics control in a hands-on manner.

## Compact and Lightweight Design

The sensor module is small, lightweight, and easy to mount on robots, chassis, or custom devices. Its compact design allows multiple sensors to be placed close together, enabling multi-line detection and complex tracking algorithms. The module is also durable, capable of withstanding standard classroom or hobbyist use without compromising performance.

## Easy to Use

The TCRT5000 sensor is designed for simplicity and reliability. Users can quickly integrate it with microcontrollers using basic digital input programming. It can operate on **3.3V or 5V logic**, making it compatible with a wide range of platforms. The sensor's fast response time ensures that robots or automated devices react instantly to line changes or surface transitions, which is critical for smooth navigation.

## Key Features

- Infrared emitter and phototransistor pair for precise line detection.
- 4-pin interface: VCC, GND, OUT, and EN for easy connection.
- Digital output compatible with 3.3V and 5V microcontrollers.
- Compact, lightweight, and durable design for small robotics projects.
- Fast response time for accurate tracking and navigation.
- Adjustable sensitivity through resistor tuning or placement optimization.

## **Package Contents**

- 1x TCRT5000 Tracking Line Follower Sensor 4-Pin Module
- 1x Flexible ribbon cable or connector (optional, depending on the supplier)
- Instruction guide for basic integration and setup

## **Why Choose the TCRT5000 Sensor**

The **TCRT5000 Tracking Line Follower Sensor 4-Pin** is an essential component for anyone interested in robotics, automation, or embedded electronics. Its high accuracy, fast response, and easy integration make it perfect for both beginners and professional developers. Whether building a small line-following robot, experimenting with AI-driven automation, or designing interactive learning projects, the TCRT5000 provides reliable performance and excellent value.

Investing in this sensor allows you to expand your robotics and electronics capabilities, develop smarter machines, and create projects that respond intelligently to their environment. Its combination of precision, versatility, and affordability makes it one of the most popular infrared line sensors in the maker community.