

5 Channel Analog Digital Flame Sensor Module – Detailed Product Description

Introduction

The **5 Channel Analog Digital Flame Sensor Module** is a powerful and efficient flame detection system designed for robotics, fire-fighting projects, and smart monitoring applications. This module comes with five flame detection sensors arranged in different directions, offering a wide detection angle and improved sensitivity compared to single flame sensors. With both **analog and digital outputs**, it provides flexibility for integration into microcontroller-based projects such as **Arduino, Raspberry Pi, ESP32, and other development boards**.

Whether you are working on a fire alarm system, robot navigation, or smart security projects, this **flame sensor module** delivers accuracy, reliability, and high sensitivity, making it one of the most popular choices for engineers, students, and hobbyists.

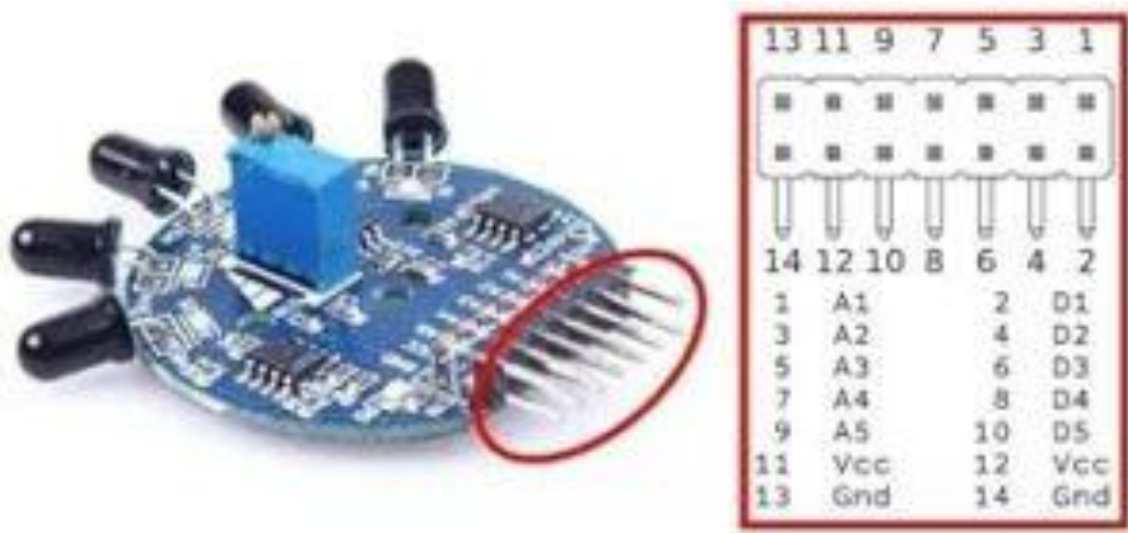


Key Features of the 5 Channel Flame Sensor Module

- **Five Independent Sensors:** Detects flame sources from multiple directions simultaneously.
- **Wide Detection Angle:** Covers 60° per sensor with an overall detection range of nearly 360°.
- **Analog & Digital Outputs:** Provides both precise analog values and digital on/off flame detection signals.
- **High Sensitivity:** Capable of detecting a flame or fire light source within a distance of 0–120 cm (depending on flame size and intensity).
- **Adjustable Sensitivity:** Onboard potentiometer for fine-tuning digital output sensitivity.
- **Onboard LM393 Comparator:** Ensures stable digital signal output and reliable performance.
- **Strong Anti-Interference:** Designed to filter out most environmental noise, allowing accurate flame detection.
- **Easy to Interface:** Works seamlessly with Arduino, Raspberry Pi, and other microcontrollers.
- **Compact Design:** Lightweight and suitable for embedded projects and robotics applications.

Technical Specifications

- **Module Type:** 5 Channel Flame Sensor
- **Sensor Wavelength Sensitivity:** 760 nm – 1100 nm (Infrared light spectrum)
- **Detection Range:** Up to 120 cm (depending on flame size and light conditions)
- **Detection Angle:** About 60° per sensor, nearly 360° total coverage
- **Outputs:**
 - **Analog Output (AO):** Provides voltage proportional to flame intensity
 - **Digital Output (DO):** HIGH/LOW signal depending on flame presence
- **Comparator:** LM393 for stable digital signal
- **Power Supply:** 3.3V – 5V DC
- **Pins:** VCC, GND, AO, DO (for each sensor)
- **PCB Size:** Compact and easy to mount



Applications of 5 Channel Analog Digital Flame Sensor Module

The **5 Channel Flame Sensor Module** is designed for projects that require fast and accurate flame detection. Some of the most common applications include:

1. **Fire-Fighting Robots** – Detect flames from multiple directions and navigate towards or away from fire sources.
2. **Fire Alarm Systems** – Build smart alarm systems that activate when flames are detected.
3. **Home & Industrial Safety Systems** – Monitor flame presence in sensitive environments such as kitchens, factories, or labs.
4. **Robotics Navigation** – Robots can detect fire as obstacles or targets in competitions and safety applications.
5. **Smart Security Systems** – Integrate with IoT platforms for real-time flame monitoring and alerts.
6. **Educational Projects** – Ideal for students and hobbyists to learn about flame detection, sensors, and automation.



Advantages of Using the 5 Channel Flame Sensor

- **Comprehensive Flame Detection:** Unlike single flame sensors, this module provides nearly 360° coverage with five independent channels.
- **Dual Output Flexibility:** Both analog and digital outputs make it compatible with simple and advanced projects.
- **High Precision:** Detects flame intensity and distance more accurately due to multi-directional sensing.
- **Easy Integration:** Works with most development boards without requiring complex circuits.
- **Reliable and Durable:** Designed with high-quality components to ensure long-term stability.

Why Choose This Module?

The **5 Channel Analog Digital Flame Sensor Module** stands out because of its **multi-directional sensing capabilities**, making it far more advanced than standard single-channel flame detectors. With its ability to detect flame sources across wide angles, it ensures higher accuracy and reliability in real-world applications.

If you are building a **fire-fighting robot, home safety system, or flame detection project**, this module is a must-have component. Its **simple wiring, adjustable sensitivity, and strong compatibility with Arduino and Raspberry Pi** make it suitable for beginners and professionals alike.

Conclusion

The **5 Channel Analog Digital Flame Sensor Module** is an advanced, reliable, and versatile flame detection solution that provides superior coverage, dual output options, and high sensitivity. Whether you're building **fire-fighting robots, flame alarm systems, or IoT-based safety devices**, this module is the perfect choice for your projects.

With its compact design, adjustable sensitivity, and easy integration, the 5 Channel Flame Sensor is a valuable addition to any electronics toolkit.