

Flame and Gas Sensor Modules

DT Workshop Equipment Reference — D&T / STEM resource for school workshops | Sensors & Modules



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Flame sensors detect infrared radiation from flames, while gas sensor modules detect gases like alcohol, smoke and LPG by a heated sensing element. They teach hazard sensing and early warning in student projects - with clear limits on their real-world safety role.

Key Features

- Flame: IR photodiode with comparator
- Gas: MQ-2/3/5 sensor families
- Analog and digital outputs
- Sensitivity adjustment
- Heater elements on gas sensors

Typical Uses in the Workshop

- Build flame detection demos
- Smoke and gas alarm models
- Safety education projects
- Rover hazard avoidance

Safe Operation

1. Mount the sensor at the right height and direction
2. Power the gas sensor and let it warm up
3. Set the threshold for the ambient level
4. Read the analog value and trigger
5. Test the response with the target source

SAFETY NOTES

- These modules are teaching tools, not certified alarms
- Gas sensors get hot - keep them away from flammables
- Do not rely on them for real fire or gas protection
- Ventilate when gas sensors heat
- Keep away from water

Maintenance & Consumables

- Clean the sensor window
- Let the gas sensor re-calibrate in clean air
- Check the wiring and threshold
- Replace exhausted gas sensors
- Test both types before demos

Specification & Buying Notes

Flame sensor modules with an adjustable comparator and MQ-2 gas modules suit safety demos. Quality modules respond consistently; cheap ones drift with temperature.