

Infrared Line Tracking Sensors

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



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An infrared line tracking sensor uses an IR emitter and receiver to detect the difference in reflectivity between a black line and a light background (or vice versa), letting robots follow painted tracks on the floor. Arrays of two to eight sensors refine accuracy.

Key Features

- Single or multi-channel arrays (2-8)
- Analog or digital outputs
- Adjustable sensitivity pots
- 3.3-5 V operation
- Mounting holes for chassis

Typical Uses in the Workshop

- Build line-following robots for competitions
- Detect edges and boundaries
- Create track-based sorting machines
- Teach threshold and sensor fusion logic

Safe Operation

1. Adjust the sensitivity pot for the floor contrast
2. Mount the sensor 5-10 mm above the line
3. Calibrate the black and white readings
4. Write logic to steer toward the line edge
5. Test on the actual track surface

SAFETY NOTES

- IR is invisible - do not stare into emitters at close range
- Keep sensors dry and dust-free
- Check wiring polarity before powering
- Do not run over cables with the wheels
- Switch off when adjusting sensitivity

Maintenance & Consumables

- Clean the sensor lenses regularly
- Check the emitter and receiver alignment
- Retune sensitivity for new surfaces
- Check the mounting height is stable
- Store in antistatic trays

Specification & Buying Notes

A 5-channel array gives smoother control than a single sensor for line following. Buy modules with adjustable sensitivity and mounting brackets, plus spare sensors for the class.