

Color Sensor Modules

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



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A colour sensor module measures the colour of a surface with a filtered photodiode array, returning RGB values or detected colour categories by program. Sorting machines, line followers and interactive projects use them to react to colour.

Key Features

- TCS3200 and TCS34725 chips common
- RGB and clear channel outputs
- I2C or frequency output
- White LED illumination
- Breakout boards with headers

Typical Uses in the Workshop

- Sort parts by colour in projects
- Detect lines of specific colour
- Build colour-mixing demonstrations
- Interactive colour-picking stations

Safe Operation

1. Calibrate on white and black surfaces
2. Set the integration time for lighting
3. Read RGB values and normalise
4. Map colours to categories in code
5. Test under the actual lighting

SAFETY NOTES

- Keep the sensor away from bright sunlight in tests
- Check the wiring polarity
- Keep the lens clean
- Do not point strong light into eyes
- Mount stably to avoid reading errors

Maintenance & Consumables

- Clean the sensor window regularly
- Recalibrate when lighting changes
- Check the I2C connection
- Keep spare modules in stock
- Protect the module from flux and dust

Specification & Buying Notes

TCS34725 I2C modules give the best data for sorting rigs; TCS3200 suits frequency-counting lessons. Quality boards calibrate repeatably. Add a mount and lighting shield.