

Inductive Proximity Sensors

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



Photo via Wikimedia Commons (Inductive_Proximity_Switch.jpg)

Inductive proximity sensors detect metal objects without touching them, using an electromagnetic field that changes when metal enters the detection zone. They sense gear teeth, passing parts and metal tools in automation with no wear.

Key Features

- Detection ranges 2-20 mm typical
- M12 and M18 cylindrical housings
- PNP and NPN outputs
- LED indicators
- 12-24 V DC operation

Typical Uses in the Workshop

- Count passing metal parts
- Detect gear teeth and shaft rotation
- Sense metal end stops in machines
- Position control in automation

Safe Operation

1. Mount the sensor at the rated gap
2. Wire power and the output with the right transistor
3. Test detection with a metal target
4. Set the gap within the sensing range
5. Check response with a meter

SAFETY NOTES

- Do not mount near strong magnetic fields
- Check the supply voltage matches the sensor
- Keep the active face clean of metal dust
- Do not use on non-metal targets
- Shield the sensor from weld splatter

Maintenance & Consumables

- Wipe the active face clean
- Check the cable and connector
- Verify the sensing range with a gauge
- Tighten the mounting
- Replace faulty sensors

Specification & Buying Notes

M12 inductive sensors with a bracket and matching connector cables suit school rigs. Choose the sensing range for the target sizes. Buy NPN or PNP to match the controller inputs.