PIR MOTION SENSOR

The PIR (Passive Infrared) motion sensor is a popular device used in various applications to detect motion within its range. It utilises infrared technology to detect changes in infrared radiation caused by moving objects, making it ideal for security, automation, and energy-saving purposes.

KEY FEATURES:

1. **Motion Detection:** The PIR motion sensor can detect human or animal motion within a specified range, typically up to a few meters. It provides reliable detection, triggering actions or alerts when motion is detected.
2. **Passive Infrared Technology:** The sensor uses a sensitive detector that responds to changes in infrared radiation emitted by warm objects. It does not emit any radiation itself, making it safe and energy efficient.
3. **Adjustable Sensitivity:** The sensitivity of the PIR sensor can often be adjusted to cater to different environments and locations. This allows for customisation based on specific requirements.
4. **Wide Coverage Angle:** PIR sensors usually have a wide detection angle, typically ranging from 90 to 180 degrees. This wide coverage ensures that motion from various directions can be detected effectively.
5. **Time Delay and Range Adjustment:** Many PIR sensors feature adjustable time delay settings, allowing users to define how long the sensor remains activated after detecting motion.

KEY BENEFITS OF PIR MOTION SENSOR:

1. **Enhanced Security:** PIR motion sensors are commonly used in security systems to detect intruders or unauthorized movements. They can trigger alarms, activate surveillance cameras, or turn on lights to deter potential threats.
2. **Energy Efficiency:** PIR sensors are widely used in lighting control systems to conserve energy. By detecting presence, they can automatically turn lights on when someone enters a room and turn them off when the area is vacant, reducing unnecessary energy consumption.
3. **Automation and Convenience:** PIR sensors are integral components in home automation systems. They can automate tasks such as opening doors, activating appliances, or adjusting temperature settings based on detected motion, providing convenience and efficiency.
4. **Cost-Effective:** PIR motion sensors are cost-effective solutions for motion detection compared to other technologies. They offer reliable performance at a relatively affordable price point, making them accessible for various applications and budgets.

CONSIDERATIONS

when installing PIR sensors there should be an overriding off switch to turn off during the day or in summer months example Eco Park hallway always on when doesn't need to be because there isn't an overriding switch.

EXAMPLE CALCULATION FROM CASE STUDY:

Installing a PIR motion sensor offers significant benefits in terms of both cost savings and energy efficiency. With an annual cost savings of £870, the sensor helps reduce electricity consumption by 4948 kWh per year, resulting in a carbon emissions reduction of just over 1tonne of CO2e annually. The initial investment required for the sensor, including labour and installation, is £2400. However, thanks to the significant cost savings, the payback period for this investment is relatively short at just 2.8 years. By implementing a PIR motion sensor, businesses can not only save money but lower their carbon footprint.

Action 1	**Cost Savings** (£/year)	**kWh Savings**	**CO2e savings** (tCO2e/year)	**Capital Cost (£)** (Including labour and installation)	**Payback Period** (years)
PIR Sensor	£870*	4948	1.04	£2400	2.8

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