

PIR Sensor Based Light Automation system

A PIR (Passive Infrared) sensor-based light automation system utilizes a PIR sensor to detect motion in the vicinity of the light. The PIR sensor can detect infrared radiation emitted by humans and provides an output signal based on the detected motion. The PIR sensor constantly monitors its surroundings for any changes in infrared radiation. When it detects motion, it sends a signal to the microcontroller, indicating the presence of movement. Upon receiving the motion detection signal from the PIR sensor, the microcontroller activates the relay by providing an appropriate output to the relay control pin. The relay is typically connected in a normally open configuration, where the light is powered when the relay is activated (closed).

The timer in the controller is set to few minutes when there is a motion detected in the vicinity of the sensor occurred due to the human activity. If another human activity is detected within the time of the first occurrence or activity, then the timer is reset to start from the second instance so that light is "ON" till there is no activity near the sensor. The system continuously repeats this cycle, monitoring for motion, controlling the relay, and operating the light accordingly. This automation system provides energy-efficient operation by only illuminating the light when motion is detected, saving energy when there is no activity in the monitored area.





