

People monitor & light switch

This circuit automatically keeps track of the number of people in a room and could be used to switch off lights when nobody is present.

Basically, it consists of two light sensors which are placed 200mm apart in a doorway so that one is tripped before the other. If the detectors are suitably angled, a common light source could be used. The concept is as follows:

When LDR1 is activated by a person walking between it and the light source, Q1 is momentarily biased (as the resistance of LDR1 goes high) on. This produces a negative-going pulse at the CK input of the 7476 dual JK flipflop. This

causes the Q-bar output of IC1a to go low which, in turn, causes the "UP" input of the 74193 up/down counter to also be pulled low.

In addition, the change of state of Q-bar also disables the 74241 Tri-state buffer.

When LDR2 is activated the Q-bar output of IC1b also goes low. This signal is ORed with the Q-bar output of IC1a to turn off transistor Q4 which enables the 555 timer. After a delay set by the resistor and capacitor connected to pin 6, the 555 low going output clears the two flipflops, allowing them to respond to the LDRs again. The up/down

counter now registers one person in the room.

If that person now walks out of the room, LDR2 is activated before LDR1 and the 74193 is made to count down (to zero).

The outputs of the 74193 are monitored by a four-input diode OR gate which turns on the transistor and thus the relay while ever there is more than one person in the room. As it stands, using the 74193 counter, the circuit can monitor the presence of up to 15 persons in a room, provided there is only one entrance.

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