Computerized Person Counter using matlab.

IR transmitter circuit is a 555 astable multivibrator circuit which oscillates in 38kHz frequency to modulate the IR light emitter by IR LED(D2). The brightness of IR LED can be adjusted using variable resistor RV1. TSOP1738 is an IR receiver which is normally used in TV and other devices, which receives IR signal and it is an active low device. If it receives modulated IR light, output is low, when it does not receive IR light, output is high. So, this acts as enable to the next 555 astable mutivibrator circuit which oscillated in audible frequency approximately (240 Hz). The output of this second 555 circuit is connected to PC’s sound card via line in. In PC, the recording device should be selected as Line in. The two diodes are for protection of sound card from over voltage. The IR LED is set to one side of pathway/door; the TSOP1738 IR receiver is set straight opposite to IR LED at the other side of pathway/door such that the IR light from IR LED always falls on TSOP1738 IR receiver without any obstacle between them. When there is no person between the IR LED and the TSOP, second 555 circuit is disabled and PC will not receive any sound signal. When a person passes between the IR LED and TSOP, the TSOP will enable the multivibrator and PC will receive a sound signal.

The MATLAB program in PC will increase a count whenever it hears a sound signal from the circuit (and a silence to ensure that the person has passed the door). The initial thresholds have to be set in the program by noting the power values displayed during silence (lower threshold > power during silence) and during a sound signal from circuit (upper threshold < power during sound signal from circuit). Always lower threshold < upper threshold. Once you have calibrated this step, you can verify the counter.

This simple circuit will cost very low and the counting is computerized and can be stored, manipulated, can be used for statistics etc. This is not only for person counter but also can be used as object counter for conveyer, vehicle counter, intruder alarm, etc. For intruder alarm, we can make the MATLAB to capture video from webcam/camera, whenever there is an intruder. (Warning: don’t forget to use D3, D4 otherwise your sound card may malfunction or even it may cause permanent damage to sound card)

The program counter.m is a text based display for person counter.

The program personcounter.m is a gui based display for person counter.

Personcounter.BMP is the circuit in image format.

Personcounter.DSN is the proteus design file of the circuit.

This circuit and software are tested and working.

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