

REMOTE-CONTROLLED FAN REGULATOR

■ Dr C.H. VITHALANI

Using this circuit, you can change the speed of the fan from your couch or bed. Infrared receiver module TSOP1738 is used to receive the infrared signal transmitted by remote control.

The circuit is powered by regulated 9V. The AC mains is stepped down by transformer X1 to deliver a secondary output of 12V-0-12V. The transformer output is rectified by full-wave rectifier comprising diodes D1 and D2, filtered by capacitor C9 and regulated by 7809 regulator to provide 9V regulated output.

Any button on the remote can be used for controlling the speed of the fan. Pulses from the IR receiver module are applied as a trigger signal to timer NE555 (IC1) via LED1 and resistor R4.

IC1 is wired as a monostable multivibrator to delay the clock given to decade counter-cum-driver IC CD4017 (IC2).

Out of the ten outputs of decade counter IC2 (Q0 through Q9), only five (Q0 through Q4) are used to control the fan. Q5 output is not used, while Q6 output is used to reset the counter.

Another NE555 timer (IC3) is also wired as a monostable multivibrator. Combination of one of the resistors R5 through R9 and capacitor C5 controls the pulse width. The output from IC CD4017 (IC2) is applied to resistors R5 through R9. If Q0 is high capacitor C5 is charged through resistor R5, if Q1 is high capacitor C5 is charged through resistor R6, and so on.

Optocoupler MCT2E (IC5) is wired as a zero-crossing detector that supplies trigger pulses to monostable



multivibrator IC3 during zero crossing. Opto-isolator MOC3021 (IC4) drives triac BT136. Resistor R13 (47-ohm) and capacitor C7 (0.01μF) combination is used as snubber network for triac1 (BT136). As the width of the pulse decreases, firing angle of the triac increases and speed of the fan also increases. Thus the speed of the fan increases when we press any button on the remote control.

Assemble the circuit on a general-purpose PCB and house it in a small case such that the infrared sensor can easily receive the signal from the remote transmitter. ●

