

REMOTE-OPERATED MASTER SWITCH

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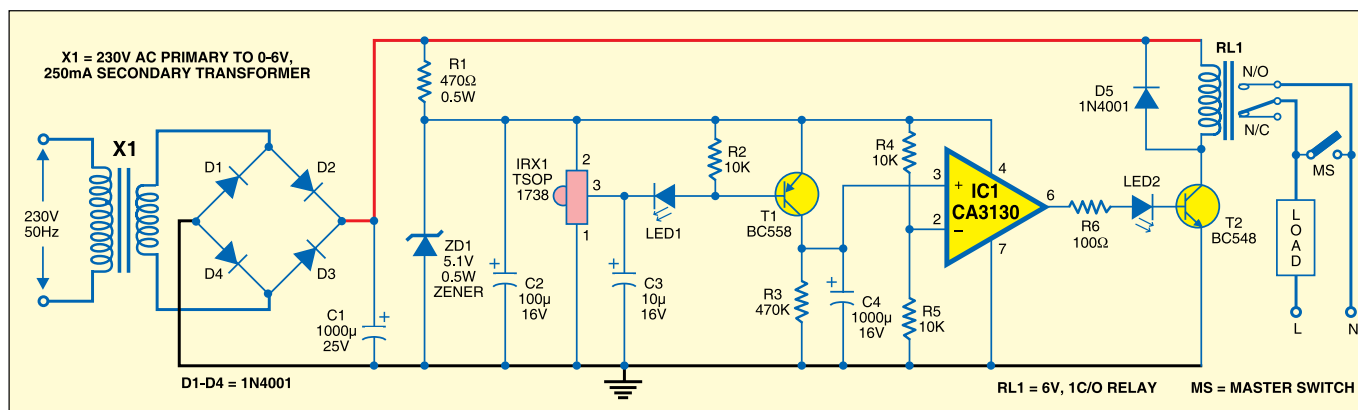
Generally, a bedside master switch is used to switch on lamps both indoors and outdoors when there is a threat of intruder. This circuit can be used to activate the master switch from the bed without searching for the switch in darkness. It can be activated by the TV remote handset. The security lamps

tial divider comprising resistors R4 and R5 maintains half of 5.1V at pin 2 of IC1. In brief, the voltage at pin 2 of IC1 is higher than at pin 3 and its output remains low. LED2 remains 'off' and transistor T2 does not conduct. Relay RL1 remains de-energised and, as a result, security lamps (both indoors and outdoors) remain switched off.

When you press any key of the remote TV handset, IR rays fall on the



glows to indicate activation of the relay as well as switching 'on' of the security lights. Connect a single-pole, single-throw 'on'/'off' switch (MS) to activate the security lamps manually



glow for three minutes and then turn off. The circuit is sensitive and can be activated from a distance of up to 25 metres.

IR receiver module TSOP 1738 (IRX1) is used to sense the pulsed 38kHz IR rays from the TV remote handset. The IR receiver module has a PIN photodiode and a preamplifier enclosed in an IR filter epoxy case. Its open-collector output is 5 volts at 5mA current in the standby mode.

In the standby mode, no IR rays from the remote handset fall on the IR receiver, so its output pin 3 remains high and LED1 doesn't glow. Through resistor R2, the base of transistor T1 remains high and it does not conduct. As a result, the voltage at pin 3 of IC CA3130 (IC1) remains low. The poten-

receiver (IRX1) and its output goes low. LED1 flashes in sync with pulsation of the IR rays. At the same time, transistor T1 (BC558) conducts to take pin 3 of IC1 high. IC1 is used as a comparator with timer action.

When transistor T1 conducts, pin 3 of IC1 gets a higher voltage than pin 2 making the output of IC1 high. Meanwhile, capacitor C4 charges to full voltage and keeps pin 3 high for a few minutes even after T1 is non-conducting. Resistor R3 provides discharge path for capacitor C4, which decides the time period for which the output of comparator IC1 should remain high.

The high output of IC1 energises relay RL1 through relay-driver transistor T2. Thus the load, i.e., security lamps, turn on for three to four minutes. LED2

when required.

Zener diode ZD1 provides 5.1V DC for safe operation of the IR receiver and associated circuit. Power for the circuit is derived from a step-down transformer (X1) and a bridge rectifier comprising diodes D1 through D4. Smoothing capacitor C1 removes ripples, if any, from the power supply.

Assemble the circuit on a general-purpose PCB and enclose in a suitable cabinet. Drill holes on the front panel for mounting the IR sensor and LEDs. Connect the master switch between the normally-open (N/O) contact and pole of relay RL1 so that the master switch can be used when needed. The relay contacts rating should be more than 4A. Mount the unit near the master switch using minimal wiring. ●