

# ANTI-THEFT ALARM FOR BIKES



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If anybody tries to steal your bike, this circuit turns on the horn of the bike to alert you of the impending theft.

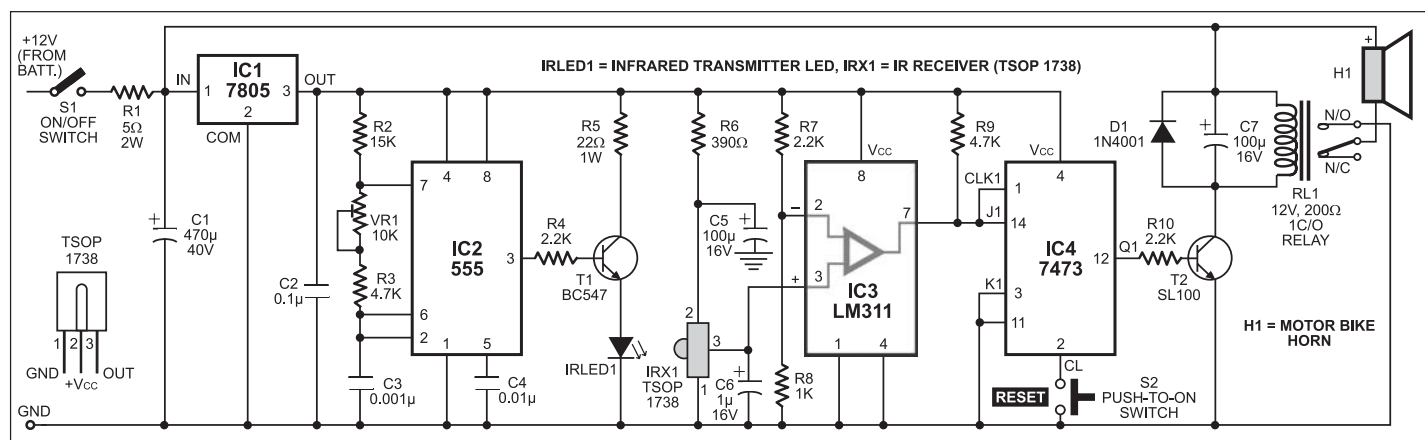
Usually, a handle lock is used on the handle bar for the safety of bikes, with the front mudguard in a slanted position.

module TSOP 1738 (IRX1), which is normally used in TV receivers. The receiver module senses the IR modulated frequency transmitted by the IR LED.

When no IR rays are incident on the sensor, its output is high. But the output of the IR sensor goes low when it senses the modulated IR signal. The output of the

of the mobike's horn, while the positive terminal of the horn is connected to the positive terminal of the battery via resistor R1. The energised relay drives the horn, which continues sounding until you press reset switch S2 momentarily.

At night, lock your bike using the handle lock and switch on the circuit us-



When the handle lock is freed, the front mudguard can be aligned with the body of the bike.

This circuit consists of transmitter and receiver sections. The transmitter (IR LED1) is fitted on the back end of the front mudguard and the receiver sensor (IRX1) is fitted on the central portion of the crash guard of the bike such that IR rays from the transmitter directly fall on the sensor when the front mudguard comes in line with the body of the bike.

The transmitter section is built around timer 555 (IC2), which is wired as an astable multivibrator with a frequency of around 38 kHz. The output of IC2 is further amplified by transistor T1 and given to an infrared light-emitting diode (IR LED1), which continuously transmits the IR frequency.

The receiver section uses IR receiver

receiver module is given to a negative-voltage comparator built around IC LM311 (IC3). The input voltage at pin 2 of IC3 is fixed by using the voltage-divider network comprising resistors R7 and R8.

When IR rays are not incident on the IR receiver module, the voltage at pin 3 of IC3 is greater than the voltage at pin 2. As a result, the output of comparator IC3 is low. But when the receiver senses IR rays from IR LED1, the voltage at pin 3 of IC3 is lower than the voltage at pin 2. As a result, the output of the comparator goes high.

The output of the comparator is given to a latch made up of JK flip-flop (IC4). The low-to-high going pulse from the comparator makes the output of IC4 high until it is reset. The output of IC4 is latched and used to energise relay RL1 via transistor T2. The relay is connected to the negative terminal

ing switch S1. Since the IR transmitter (IR LED1) and the receiver (IRX1) will not be in line of sight, IR rays from IR LED1 will not be incident on the sensor. When anyone tries to move the bike away, the IR transmitter and the IR receiver will come in line of sight and the IR rays from the IR transmitter will be incident on the receiver. This will make the output of the comparator (IC3) high. The pulse from the comparator will make the output of latch IC4 high and transistor T2 will conduct to sound the horn via relay RL1.

**Note.** The circuit excluding the transmitter and the receiver can be housed in a small metal box and kept inside the tool box of the bike.

Before you start your bike, make sure that the circuit is switched off using switch S1.