

LAPTOP PROTECTOR

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Protect your valuable laptop against theft using this miniature alarm generator. Fixed inside the laptop case, it will sound a loud alarm when someone tries to take the laptop. This highly sensitive circuit uses a homemade tilt switch to activate the alarm through tilting of the laptop case.

The circuit uses readily available components and can be assembled on a small piece of Vero board or a general-purpose PCB. It is powered by a 12V miniature battery used in remote control devices.

IC TLO71 (IC1) is used as a voltage comparator with a potential divider comprising R2 and R3 providing half supply voltage at the non-inverting input (pin 3) of IC1. The inverting input receives a higher volt-

age through a water-activated tilt switch only when the probes in the tilt switch make contact with water. When the tilt switch is kept in the horizontal position, the inverting input of IC1 gets a higher voltage than its non-inverting input and the output remains low.

IC CD4538 (IC2) is used as a monostable with timing elements R5 and C1. With the shown values, the output of IC2 remains low for a period of three minutes. CD4538 is a precision monostable multivibrator free from false triggering and is more reliable than the popular timer IC 555. Its output becomes high when power is switched on and it becomes low when the trigger input (pin 5) gets a low-to-high transition pulse.

The unit is fixed inside the laptop case in horizontal position. In this position, water inside the tilt switch ef-

fectively shorts the contacts, so the output of IC1 remains low. The alarm generator remains silent in the standby mode as trigger pin 5 of IC2 is low.

When someone tries to take the laptop case, the unit takes the vertical position and the tilt switch breaks the electrical contact between the probes. Immediately the output of IC1 becomes high and monostable IC2 is triggered. The low output from IC2 triggers the pnp transistor (T1) and the buzzer starts beeping.

Assemble the circuit as compactly as possible so as to make the unit matchbox size. Make the tilt switch using a small (2.5cm long and 1cm wide) plastic bottle with two stainless pins as contacts. Fill two-third of the bottle with water such that the contacts never make electrical path when the tilt switch is in vertical position. Make the bottle leakproof with adhesive or wax.

Fix the tilt switch inside the enclosure of the circuit in horizontal position. Fit the unit inside the laptop case in horizontal position using adhesive.

Use a miniature buzzer and a micro switch (S1) to make the gadget compact. Keep the laptop case in horizontal position and switch on the unit. Your laptop is now protected. ●

