

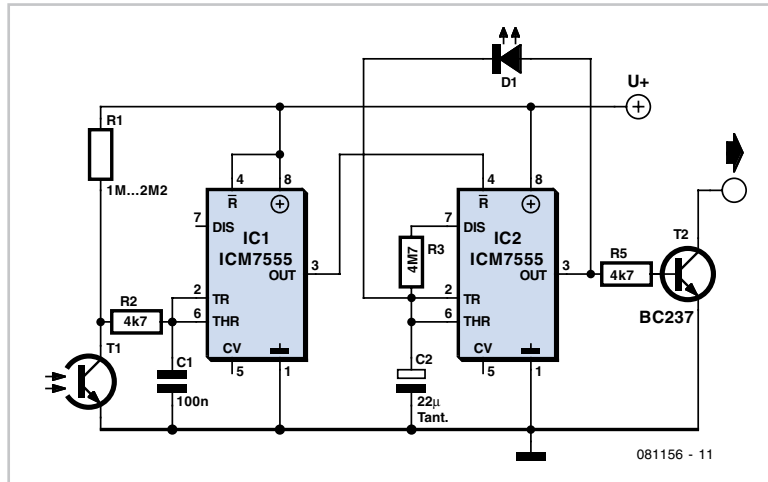
Remote Washing Machine Alert



Götz Ringmann (Germany)

It is often the case these days that the washing machine and tumble dryer are installed in an outbuilding or corner of a garage. This not only makes the kitchen a much quieter place but also leaves room for a dish washer and gives additional cupboard space. The problem now is how to tell when the wash cycle is finished. In bad weather you don't want to make too many fruitless trips down the garden path just to check if the wash cycle is finished. The author was faced with this problem when he remembered a spare wireless door chime he had. With a few additional components and a phototransistor to passively detect when the washing machine's 'end' LED comes on, the problem was solved.

C1 smoothes out any fluctuations in the LED



light output (they are often driven by a multiplex signal) producing a more stable DC voltage to inputs 2 and 6 of IC1. The circuit is battery powered so the CMOS version of the familiar 555 timer is used for IC1 and IC2. The output of IC1 (pin 3) keeps IC2 reset (pin 4) held Low while there is no light falling on T1. When the wash cycle is finished the LED lights, causing T1 to conduct and the voltage

on C1 starts to fall. Changing the value of R1 will increase sensitivity if the LED is not bright enough.

When the voltage on C1 falls below 1/3 of the supply voltage IC1 switches its output (pin 3) High, removing the reset from IC2. T2 conducts and LED D1 is now lit, supplying current to charge C2. When the voltage across C2 reaches 2/3 supply IC2 switches its output Low and C2 is now discharged by pin 7 via R3. The discharge time is roughly one minute before

the transistor is again switched on. The process repeats as long as light is falling on T1.

Transistor T2 is a general-purpose small signal NPN type. The open collector output is wired directly in parallel with the bell push (which still functions if the transistor is not switched on). Ensure that transistor output is wired to the correct bell push terminal (not

the side connected to the negative battery terminal).

Each timer consumes about $60\ \mu\text{A}$ quiescent and the circuit can be powered from the

transmitter battery. Alternatively a 9 V battery can be substituted; it has much greater capacity than the original mini 12 V battery fitted in the bell push.

Before you start construction, check the

range of the wireless doorbell to make sure the signal reaches from the washing machine to wherever the bell will be fitted.