

CIRCUIT NOTEBOOK

Interesting circuit ideas which we have checked but not built and tested. Contributions will be paid for at standard rates. All submissions should include full name, address & phone number.

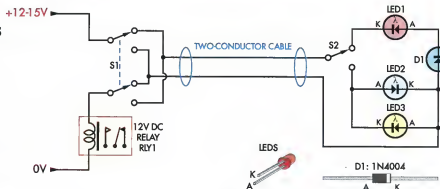
Dual-switch relay control logic using LEDs

This circuit uses LEDs both to indicate the status of two switches and the relay that they both control and to perform the logic needed to control that relay from both switches. It was designed to allow both indoor and outdoor switches to control a 12V LED lamp, illuminating the outdoor area.

The 12V DC coil relay was run off the same power supply. The LEDs and S2 were located indoors. All LEDs are rated for at least 50mA or 0.5W, as they must be able to pass the coil current for the relay. RLY1

The outside 12V LED lamp is switched on via RLY1's COM & NO contacts.

With switches S1 & S2 in the positions shown, RLY1 is off and none



of the LEDs are lit. If indoor switch S2 is toggled, blue LED2 lights and the relay coil is powered, switching on the outdoor light. In this mode, toggling outdoor switch S1 will not turn the light off but it will result in blue LED2 switching off and yellow LED3 switching on, to indicate that S1 is now overriding S2.

With indoor switch S2 off, outdoor switch S1 can be toggled to turn on the light. In this case, red LED1 lights up. Should the indoor switch be tog-

gled off with S1 on, the relay will remain on and thus the outdoor light also stays on, preventing the person outside from being left in the dark. As explained above, yellow LED3 lights to indicate that both switches are in the on position.

Note that S1 effectively operates as a “changeover switch”, ie, it swaps the connections to the 2-conductor cable when toggled.

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Improvement to ducted home vacuum system

Ducted vacuum systems have a large vacuum unit with several hose inlets arranged around the home. The central vacuum unit starts automatically when the user connects the vacuum hose to an outlet. A simple switch mechanism in each of the outlets completes a low-voltage control circuit when the hose is connected.

The downside of this arrangement is that if you don't have a switchable hose, you find that you have to walk back to the inlet and unplug the hose a number of times during a typical cleaning session. You can upgrade to a switchable hose but they cost well over a hundred dollars.

A simple solution is to install a cheap wireless RF remote control switch near the central unit and clip the associated remote control

lob to a cable tie on the end of the vacuum hose. These low-cost wireless RF Remote Control Switches are available on eBay or from KitStop (www.kitstop.com.au, as featured in the "Barking Dog Blaster Wireless Remote" article in the October 2012 issue). These typically have at least one set of relay terminals which are controlled remotely; the KitStop unit has two independent outputs.

You can power the relay/RF receiver from your vacuum unit if it uses a 12V DC control system. Mine uses 24VAC, so I used a small 12V plugpack instead. Wire the relay's NC (normally closed) contacts in series with the switches on the inlets. This means you can still use the vacuum system in case you misplace the remote control or its battery goes flat.

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