I have been struggling to use a garage door opener remote carried in my pocket for a few months and find that it the only way I can reliably press the button is to bend down to pick up a glove or my key – not always practical or desirable. So, I hunted around for a solution where I could hardwire it into my bike and not require an extra switch to operate. I found a solution by axsys on CBRforum.com (search "axsys door opener" for reference) that very closely met my need and served as the inspiration for this project. Here are my alterations suited my RE and remote.

Requirements:

Use an existing switch on the bike
Power remote from bike to eliminate the battery
Have a means to disable it when servicing the bike
Cheap

My door opener is an old Genie for which I bought my wife a key-fob remote that operates on 12 volts, making powering it easier than the 9-volt units we carry in the cars. Since my wife does not carry the key-fob any longer, I felt free to have at it. It is also small, which let me place it in front, rather than under the seat or other "behind" location.

The finished unit is in a 4" x 2" x 1" black plastic Radio Shack project box that fits just below the Royal Enfield badge between the fork tubes. (Yellow arrow)

The remote receives power from the bike, clamped at 12 volts protecting it from over-voltage. A relay with a timing circuit driven by the high-beam circuit operates the remote, by "pressing" the button for about a second and then releasing. This lets me use the high-beam normally and the remote only operates for a second.

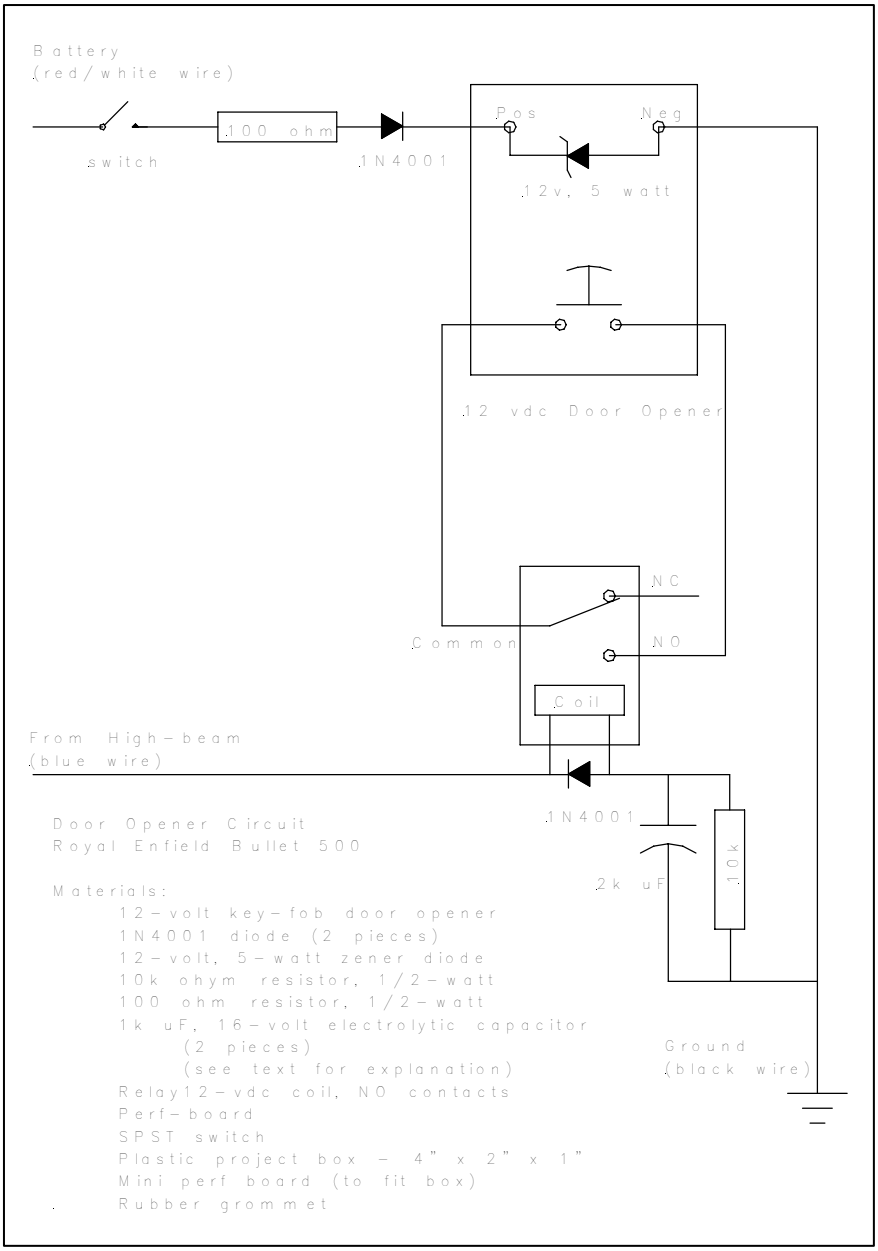
As I drive in or out, a click of the headlight flash button opens or closes the door.

Had I not destroyed the first remote, the total project cost would have been less than $10.00. But, instead, it was more like $32 adding in the second remote; still, not too bad compared to a commercial unit.

This is a rear view of the built unit with mounting bracket. The drawing I have included shows a bent sheet metal bracket, while I made mine from 1-1/2" x 1-1/2" x 1/16" aluminum angle from the scrap bin. I glued two pieces together with epoxy and it seems strong enough. The drawing also shows a longer back to catch all four screws of the project box. Since taking the picture, I added a small switch to the left end to permit disabling the unit when servicing the bike.

Circuit Explanation

The circuit, based upon a design from www.the12volt.com, is quite simple and seems to work reliably.



The 1N4001 diode feeding power into the remote is necessary to allow the capacitor to charge and relay to drop. If missing, the relay closes on energizing the blue wire, but it never drops, meaning the remote stays on all the time.

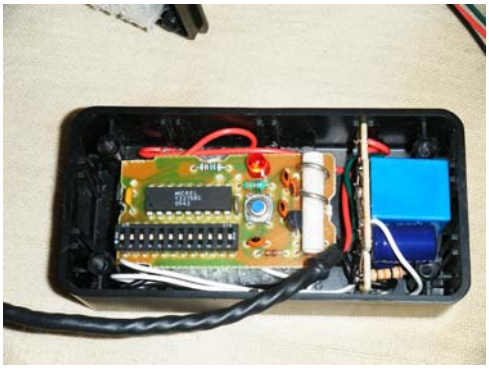
The 100 ohm resistor and 12-volt zener diode across the positive and negative terminals of the remote limit the supply to 12 volts and provide protection from the charging voltage of the bike, which is north of 13 volts.

The 1N4001 diode across the relay coil prevents the power spike associated with releasing the relay from cause damage to other electronics on the bike—like the remote.

A 1k uF capacitor charges in about ½ second, which I thought was too short, so I increased it to 2k uF. Since I had only a small space in my box, I used two 16 volt capacitors in series (they are smaller than a 2k uF cap), and should be fine in this application.

The 10k Ohm resister and the high-beam indicator lamp bleed the charge from the capacitor when you turn off the high beam letting the relay open. This takes about a

second, so you cannot quickly double stroke the remote. Look before you close the door, as you may not be able to stop it as soon as you might like.

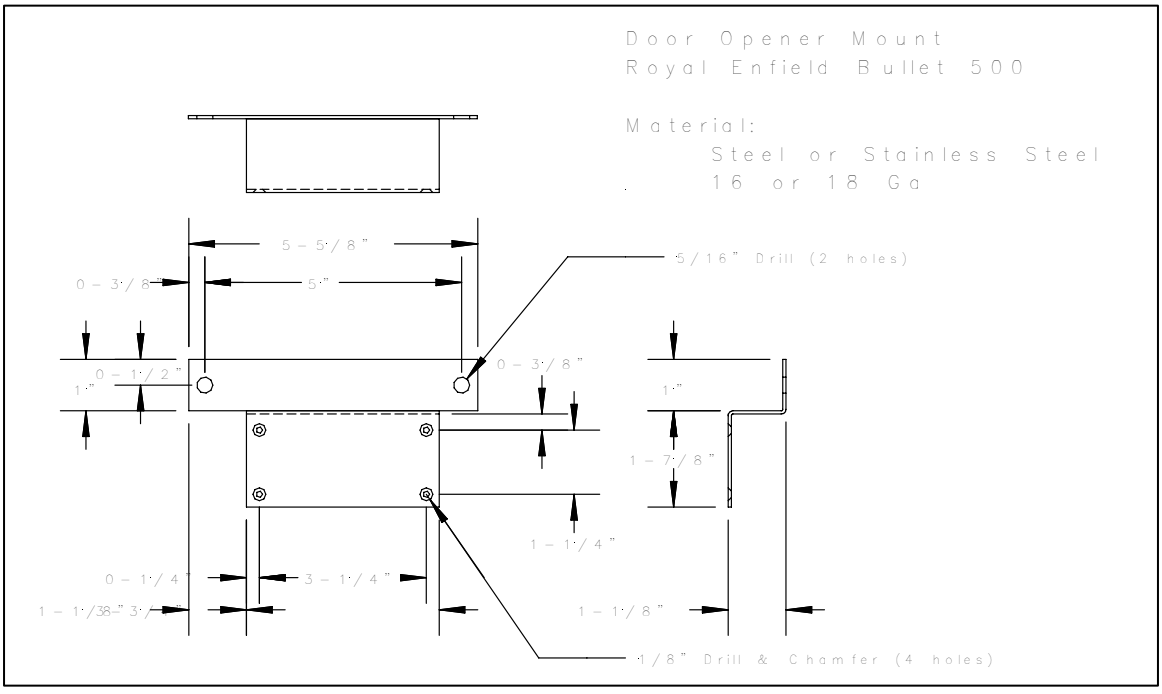


Here are the elements in the project box. I scavenged the relay from something in the past, but Radio Shack sells a suitable piece that fits in the same space.

As a way to prevent pulling the wires out of the box, put a tight fitting ring around the wires and heat-shrink tubing to bind the wires and ring together. Not having a ring, I made one by wrapping a piece of 14 ga. copper from a piece of house wire around a drill bit.

A small switch (mounted in the cover) fits into the space at the left end of the remote control board.

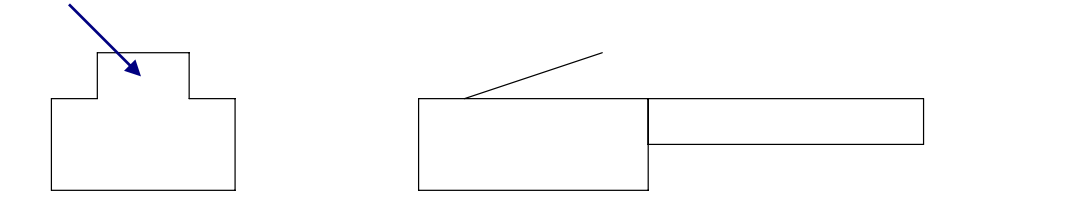
The perf board slides into guides in the box, which hold it in place. Pieces of stiff foam scavenged from packing material holds the remote board. Pick some of the foam away from where the button fits to avoid having it press the button.



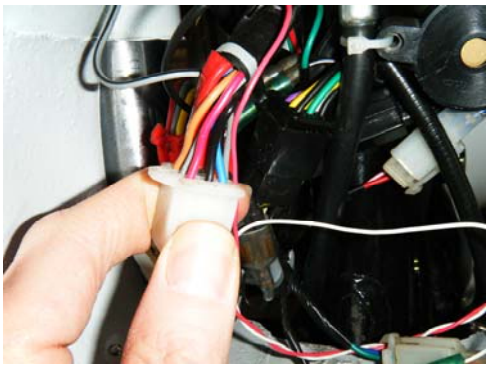
The mount is asymmetrical to avoid interfering with the front brake cable and you may need to adjust to accommodate your brakes. Not having a piece of sheet metal, I fabricated a mount from a couple pieces of aluminum angle. The dimensions are accurate, but confirm everything before making your part. Also, add holes for the grommet and switch where they make sense for your assembly.

The drawing shows the bracket from behind.

To wire it in, I added short lengths the connector from the left-hand switch module. The thinking is that if I really mess things up, the switch module harness is probably cheaper to replace than the bike harness. Anyway, the nine-pin connector has the wires necessary for the remote. Verify your wiring; mine has red/white as the main 12-volt supply, black is ground, and blue is the high-beam. With a very small screw driver or a small drill bit and working from the open end of the female connector, depress the finger holding the red/white, black, and blue sockets in the connector and slide them out the back.

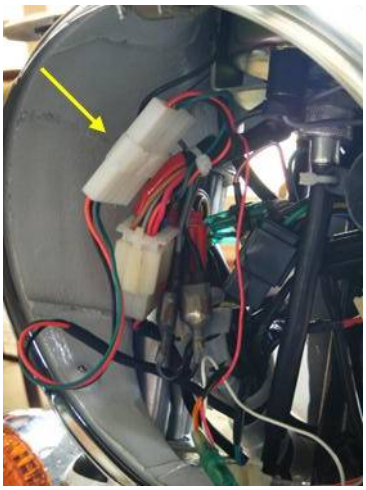


Connector Opening Side view of Female Connector



As you view the end of the connector, the little finger holding the connector in the block is in the upper rectangle (arrow), which is where you need to insert a tool to depress it.

I solder these connections, which is easy with a little preparation. Since it is difficult hold a wire, connector, solder, and iron inside the small space of the headlight housing with only two hands, do it a bit a at time. Bend the stripped end of the wire to create a small step to let it nestle into the crimped area of the connector and then tin the wire (melt some solder on it). Then put a blob of solder on the connector over the crimped area. This area has the most "headroom" and the plastic connector will accommodate an extra wire here. Now, with one hand hold the wire and connector together and apply heat to the back of the connector. When solder melts and the wire presses into the melt, remove the heat and wait a few seconds for the solder to harden. Once cool, pinch the wire a bit tighter to the connector and reinsert the connectors in the block.



I had a PC power supply connector in my scrap bin, so used it to allow removing the remote, if necessary, like I replace the opener.

ASSESSMENT

The reason I had to buy a new remote is that I tried to be too clever at an early point. I shorted the push button and used the relay to power the remote directly. In early

testing, I chattered the relay a few times, which may have caused power spikes large enough to ruin the remote. I am not a EE, so maybe it just died a natural death, but I kind of doubt it. A friend and EE provided the necessary guidance and design review for the circuit, so it is not off the mark.

If your remote control uses less than 12 volts and you want to power it from the bike, since the bike voltage ranges from around 12 to 15 volts, you will need to add a power regulator, like one from the 78xx family. This is not too difficult and there is much information about this on the Internet, but you may need to deal with the heat. Not a big problem as the Radio Shack project box comes with an aluminum cover (in addition to the plastic one), which will make a great heat-sink.

Results

I have been using the new remote for a few days and it works pretty well. I would like a bit more range, but my garage is off an alley, so I don't get much of a shot until I am close.

Well, that is about it. I hope you find this useful.