

Adding an LED indicator to the X10-WS467 wall switch

Credit: [Bruce Stydnicki](#)

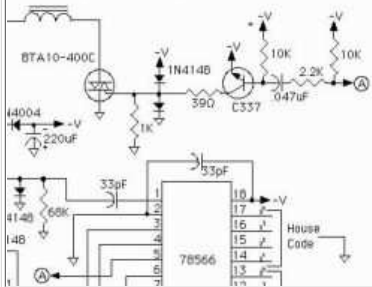


1. I had a need to monitor the status of my outdoor lights which are connected to X10-WS467 wall switches. The outdoor lights are in a location where I can't tell if they are on from inside the house. A couple times I have found them left on during the day. This prompted me to add an LED indicator. This is how the LED modification to the X10-WS467 wall switch looks in my house.

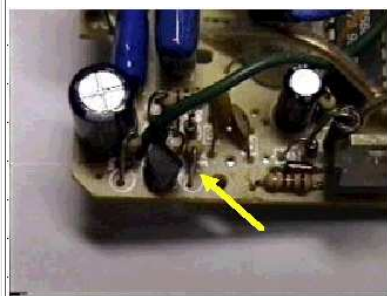
Disclaimer: The X10 switch contains high voltage inside. Any attempts to open the case and modify the switch are to be done at your own risk. Possible shock or fire can result with any modification. Bruce Stydnicki or this web site will not be held responsible for the information or actions from this page.



2. This is the end result of how the LED fits between the push button switch and power-cut switch.



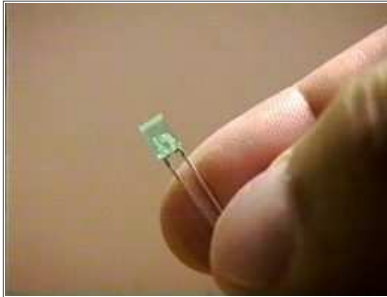
3. It seemed that there was not enough current to drive the LED directly from pin 5 of the IC, so instead of adding a driver I used the existing driver circuit which fires the gate of the triac. I put the LED in series with the 39 ohm resistor R8 and transistor T1. I also found that if I replaced R8 with the LED I got a bit more brightness. I figured the LED would limit the voltage about the same as R8. [Click to enlarge](#) schematic by Steve Bloom.



4. R8 is the 39 ohm resistor (orange-white-black) immediately to the right of the transistor T1. Remove the long lead of the resistor connected to transistor T1. The anode-positive lead (long leg) of the LED should go in this vacant resistor hole. The cathode-negative (short leg) will attach to the side of the resistor you just removed. Use heat-shrink tubing to insulate the exposed resistor lead.

Update by Doyle Towles: I attempted the addition of an LED as described in the modification to the WS467 Wall switch. However, it originally did not work. When I reversed the leads from the LED to the holes that had held the R8 resistor it worked like a charm. Therefore, the instruction in 4 should read: "The cathode negative lead (short leg) of the LED should go to the hole formerly occupied by the long lead of the resistor. The anode positive lead (long leg) will attach to the side of the resistor you just removed." This all makes sense if you recognize the direction of the current flow.

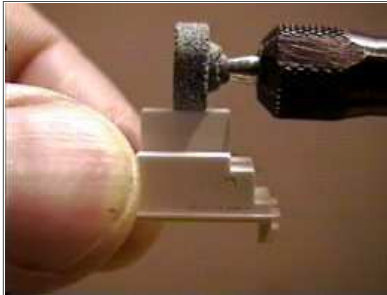
I preferred to just replace the resistor with the LED to get a slightly brighter LED. I think the resistor and LED are a trade-off on limiting the voltage in the circuit.



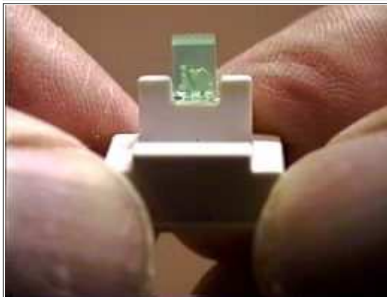
5. I had to try a couple different LED's until I found one that was bright enough for my liking. The LED I found that fit the location and gave the best glow was from [Digi-Key P438-ND](#).



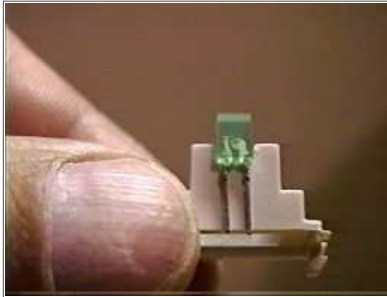
6. Now for the actual construction technique:
a. Remove plastic bottom of switch box.
b. Remove screw on triac heat sink
c. Remove metal cover.
d. Take out circuit board. Watch for spring and metal contacts to fall out. We will put them back later.
e. Remove power-cut slide switch and housing.



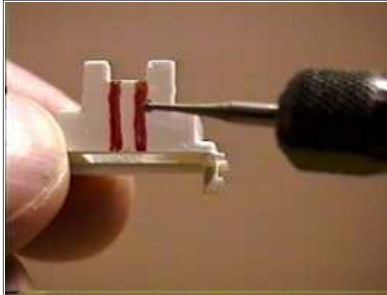
7. I used a Dremel tool to notch out a place for the LED on the power-cut switch housing. Take a little off at a time or the plastic will melt instead of filing. Don't let the tool get away from you or you will need to have spare switch parts available for goof ups.



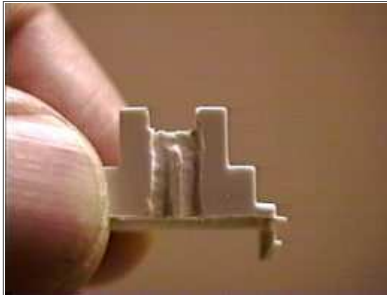
8. Stop to check the depth of your cut often as you grind. The effect I wanted was for the LED to match the height of the top of the safety switch lever but a hair below the push button height..



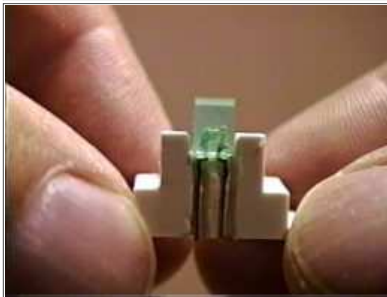
9. Mark where the LED leads will line up on the plastic housing.



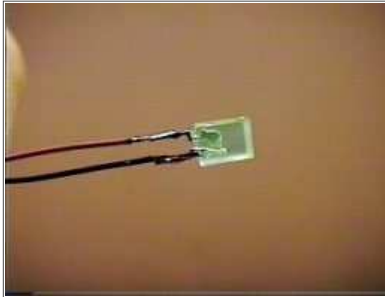
10. I gouged a trough with the Dremel for the LED leads, just deep enough for the leads fit inside.



11. Note the area between the leads will be used as an insulator. Also note the area above the insulator was gouged out a little to allow for the kink in the lead at the base of the LED.



12. Cut the LED leads half the length of the trough. Shorter than pictured. This will keep the solder joints insulated within the plastic. Note: If you don't remember which lead was longer after cutting them then look into the LED lens and you can identify the skinny metal side of the filament as the positive anode side.



13. Solder 30-gauge wire (such as used for wire-wrapping, see Radio Shack 278-501). Make a clean solder connection. Any excess solder globs will protrude the trough and not allow the power-cut switch housing to fit flush.



14. LED in trough showing how the soldered leads will be insulated.



15. Drill a small hole for the LED wires at the very base of the plastic push button switch. Do not let the hole interfere with the area where the power-cut slide switch will slide.



16. Temporarily seat the power-cut switch housing without the slide lever. Insert the LED wires and pull the LED into place. Yes, you may have noticed I left out the step where I spray painted the exposed plastic area an ivory color. The X10 switches only come in white now and my house decor has ivory wall switches and plates.



17. This is how it should look. The LED is a hair below the height of the push button and resting on the notch in the power-cut housing.



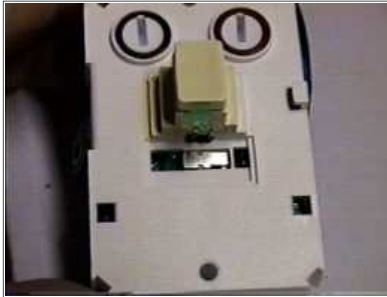
18. Keeping the wire leads snug I applied hot glue on the inside only to keep the wires and LED in place.



19. Remove R8 and attach the LED wires in it's place. Be sure to connect the LED wires (anode + and cathode -) in the correct direction as in step 4.. An LED is a diode and will block the current to turn on the triac if reversed. This can be tested before packaging the WS467 back together. You will have to jumper the power-cut switch posts and connect a light bulb load to get power to the circuit. Short the button contacts if you have a model that doesn't use a micro switch. Or send a remote command to M13. That is the default address of the switch when the address decode wheels are off.



20. Carefully take off the power-cut switch housing again, not to disturb the LED and wires. This is in preparation for re-inserting the metal power-cut contact. Snap the circuit board back in place.



21. Lay the metal power-cut contact in place across the metal posts.



22. Insert the power-cut slide into its housing. Insert the spring loaded contact in the power-cut slide house. Carefully tilt the switch base and power-cut unit together at 45-degree angles so not to allow the metal contacts to fall out of place. Then snap the power-cut housing in place being careful not to disturb the LED. Re-assemble the metal heat sink and snap the back cover into place.