How to Build the

SawStopLight

Version 1.0

Remote Indicator Light For SawStop Table Saws

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1   Introduction

The *SawStopLight* is a simple device that shows the state of the red and green status lights on the saw's front panel on a red/green tower light. The tower light can be placed in any convenient location, on or off the saw, so that you can see the status of the saw more easily.

The *SawStopLight* is based on a sensor module that detects the light from saw's front panel lights. Light sensor modules are widely available from a variety of manufacturers. There are minor differences between them; this design is based on the *Ninetonine DC 12V Car Led Light Control Photoresistor Plus Relay Module Light Detection Sensor,* available from Amazon.

The Amazon seller provides a helpful diagram for how to hook up the module. This document describes all the details to get from this diagram to a working system.

2 Parts List

These items were purchased from Amazon

Item	Quantity
Ninetonine DC 12V Car Led Light Control Photoresistor Plus Relay Module Light Detection Sensor	2
Nxtop Industrial Signal Light Column LED Alarm Round Tower Light Indicator Warning Light Red Green Steady On DC 12V	1
12V 5A Power Adapter, AC100-240V to DC12V Transformers,Power Supply For LED Strip Light,Wireless Router,ADSL Cats,Security Cameras,5A Max, 60 Watt Max 2.1mm X 5.5mm US Plug	1
20 Pairs JST SM 2 Pin Male Female Connector 22 AWG Red and Black 100mm Wire for RC Plane Battery (20 Pairs, R+B 100mm)	1

These items were purchased at a local hardware store

Item	Quantity
Lightweight (22ga?) speaker wire	25 feet
#4 x ½" Threaded bolt	4
#4 Hex Nut	4
¼" Nylon Spacer	4
Toggle Switch	1
Heat Shrink Tubing, 3/16"	As required
3M Command Mini Hooks	As required
2-gang switch box	1
Switch box cover	1
Rare earth magnets (1/2" disk magnets are a decent size)	8

3 Overall Design

This figure shows how all the components connect.
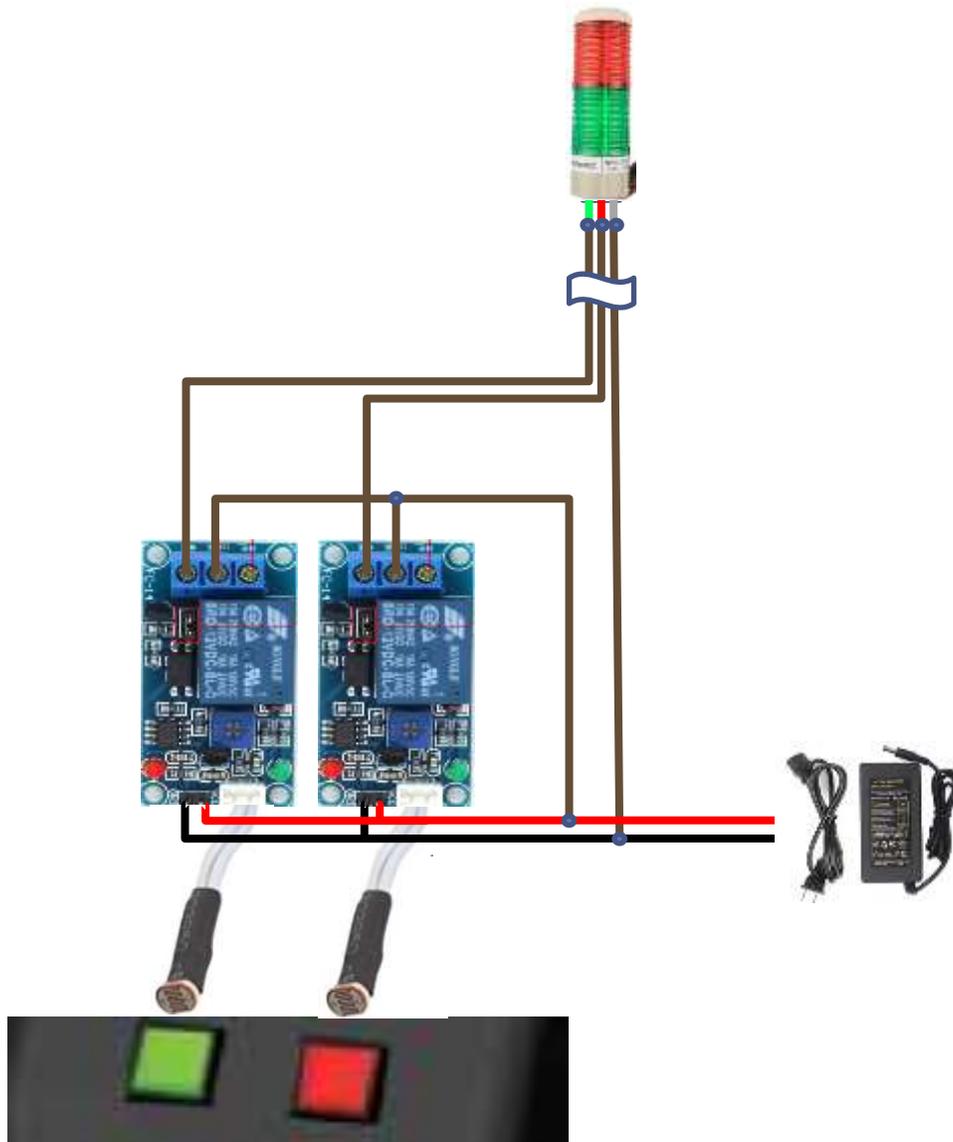
4   Mount the relay modules in a box

I used a plastic electrical distribution box from Home Depot.

The relay module has a 1/8" hole in each corner. Position the two relay modules where you want them in the box and mark the location of two opposite corners of each relay module on the box. Drill the four 1/8" holes in the box.

Use nylon spacers and #4 x ½" bolts & nuts to attach the modules to the box.

Also drill a 3/16" hole on each side of the box for the power input, the tower light output, and the photo resistor wires.

Hole for photoresistor wires

Hole for tower light wires

Hole for power wires
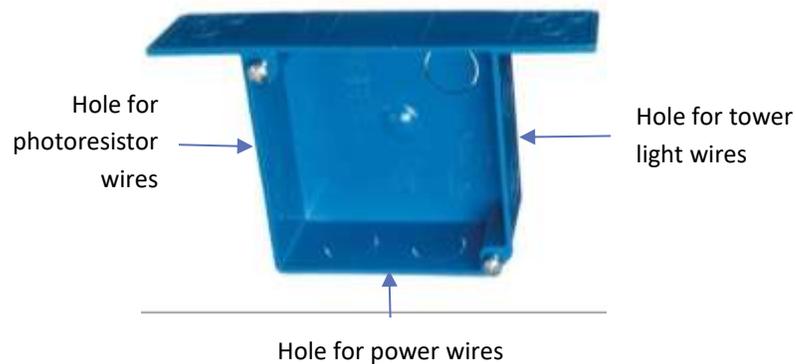
5   Extend the length of the tower wires

The tower comes with red, green, and gray wires. They need to be longer, say around 4 feet, maybe more if you have a 56" table.

Use some 18-24ga stranded wire (something like lamp cord). Stranded wire is more flexible than solid.

I had some 2-conductor lightweight speaker cable lying around, so I cut 2 sections, and split one of the sections into two wires. Strip all 6 ends.

Mark **both ends** of each wire in some way so that you can distinguish the red, green, and gray. I used red, green, and black Sharpies. This is just temporary – it makes it easier to connect the right wires later.

Twist the wires together so that they stay neatly bundled. Some wire doesn't twist all that well; if necessary, bundle the wires with zip ties, string, or similar. The speaker wire twisted together more easily than the wires on the tower light.

Solder the speaker cable to the 3 tower light wires. Tape, or better yet heat shrink, the solder joint. (Note, if you use heat shrink tubing, cut a piece and put it on the wire BEFORE you solder it. Ask me how I know.)

Feed the wire bundle through one of the holes in the box.

6   Connect the power

Cut the connector off of the power supply cable, and strip the ends of the red and black wire
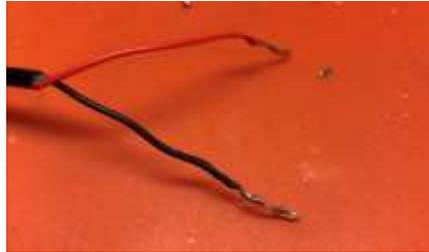

Feed the wire through one of the holes in the box, and solder two female connectors to the power cable – red to red, black to black. (Note, this picture doesn't show the box – make sure that the wire is fed through first! If you forget, you'll need a bigger hole in the box for the connector.

Also solder the grey wire from the tower light to the black (ground) wire, and a 3"-4" jumper wire to the red (power) wire. The jumper wire must be long enough to reach the screw terminal block on the relay module.
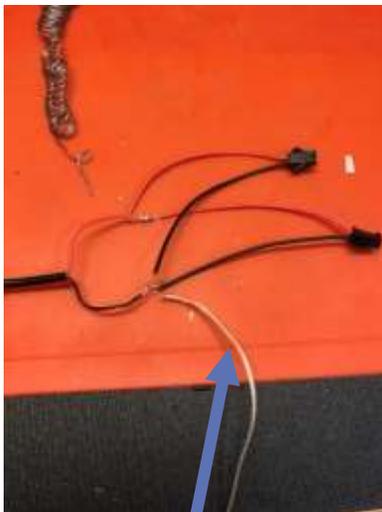

Grey wire
from the
tower
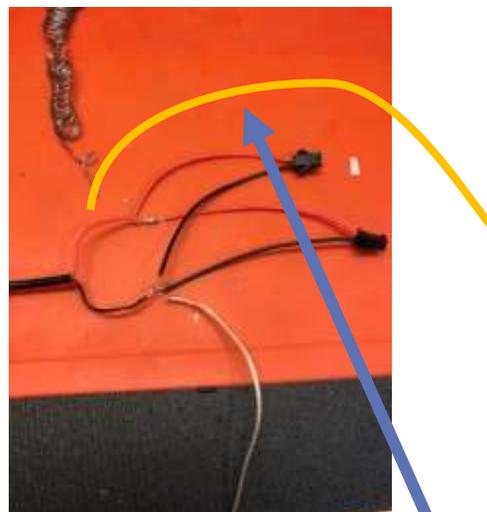
Jumper wire

If you choose to include a switch, cut a hole in the cover of the box and install the switch into the cover. The switch goes on the red (positive) wire from the power supply at position ① in the picture below. Sorry for the red wire on a red background!
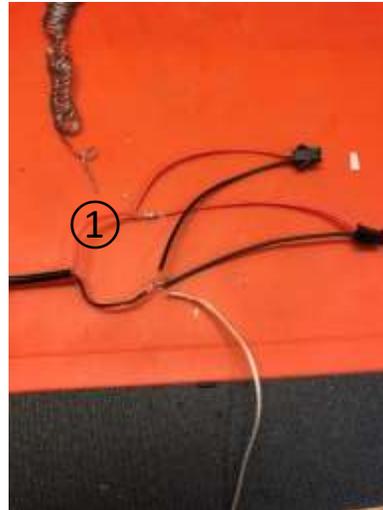

Plug the two female connectors into the power pins on the relay module (① in the figure below). Check the orientation; the red is VCC and the black is GND. Screw the jumper into the center screw of one of the modules (② in the figure below. Add a second jumper to connect the first module to the second one (③ in the figure below).

Gray wire
from tower
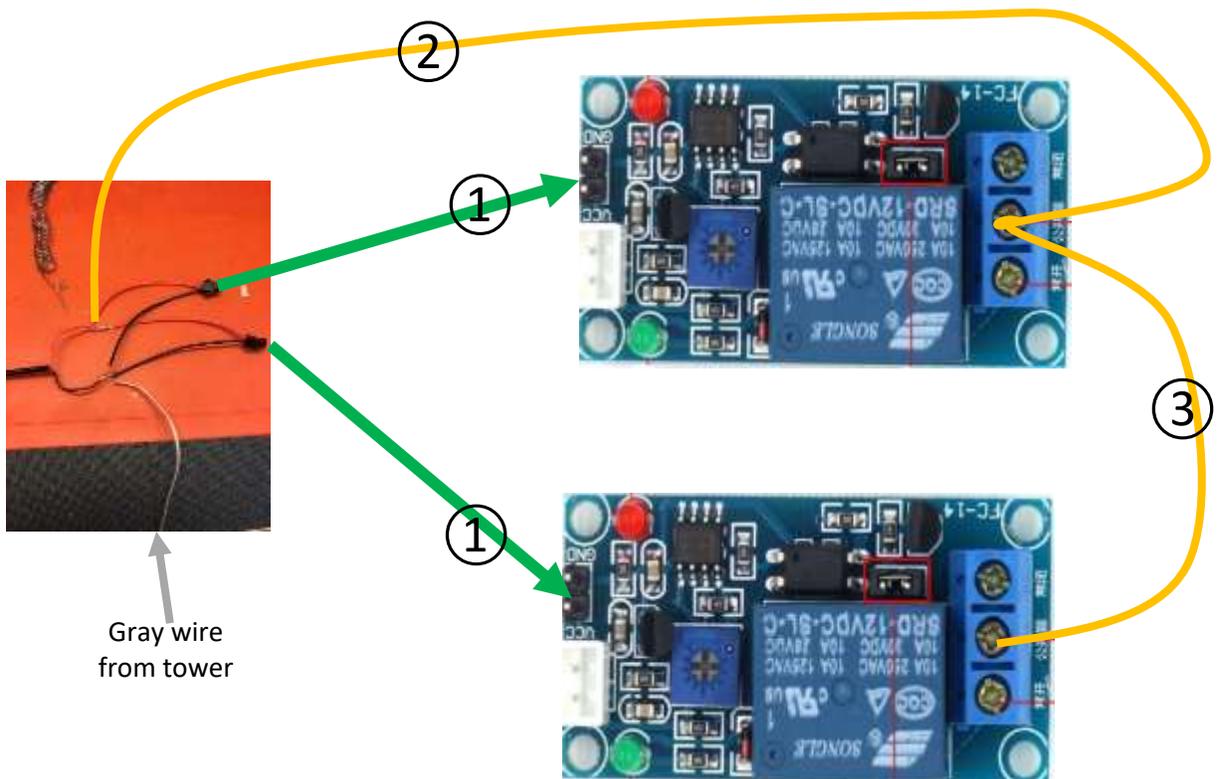
7 Connect the tower light

Attach the red tower light wire to one module, and the green wire to the other module. Use the TOP screw on the terminal block.

Red wire from tower

Green wire from tower
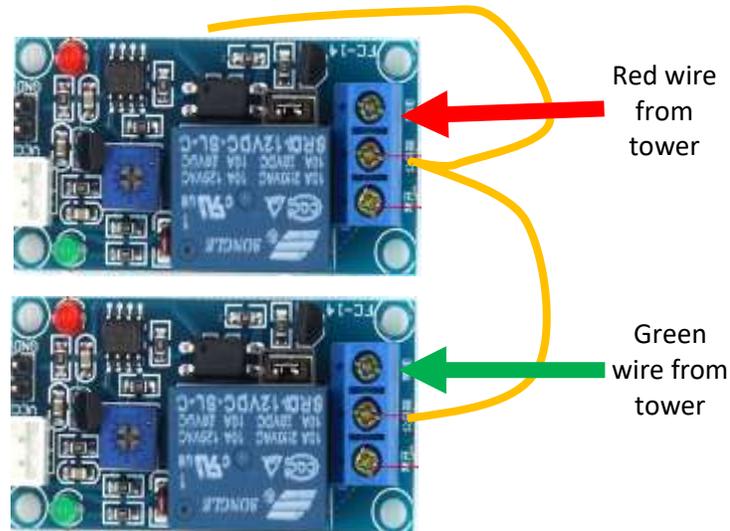
8 Connect the photoresistors

Feed the photoresistor leads through the last hole in the box and plug them into the socket on the relay module.

Remove the jumper from the relay module

Remove jumper

Plug the power supply and test the *SawStopLight* – when you block light to the photoresistor, the tower light should go off.

9 Mount the box

Epoxy four strong rare-earth magnets to the box and three to the bottom of the tower light to mount them to the saw. The tower light can attach to the table top, the fence, or the rail, depending on what you're doing. (*Note: The magnets are strong. Tape each one in place as you glue them, or they'll jump off the glue and stick together. Ask me how I know. Don't use hot glue gun either, the magnets won't stick.*)

Cut a piece of cardboard large enough to cover the indicator lights on the saw, about 2x3"

Cut two small slits in the cardboard at the distance between the indicator lights on the saw

Feed the photoresistors through the slits and Tape the cardboard over the indicator lights with the photo resistors touching the lenses on the indicator lights.

Use 3M Command mini hooks to route the wires neatly to the back of the saw.