This supplemental information shows schematics for assembling the tail flick analgesia meter and circuit diagrams for the tail flick analgesia meter. The schematics are shown in traditional drafting style with multiple views of each piece. Assembled views are also shown.

The black lines in the circuit diagrams indicate wires connecting the various components. All wires can be made any length that makes assembly as simple as possible. Fig. 1 shows what the various components look like in their physical appearance and the traditional circuit diagram.
TOP OF PLATFORM (Acrylic, need 1)

The hole drilled in the center is for the phototransistor. It can be taped or glued into place from the bottom. It is typically easier to drill the 1/8" hole all the way through. Then drill the 3/8" hole from the bottom about half-way through. It is not critical that it is exactly half-way.

Figure 1: Top of the apparatus with a small hole for the phototransistor.
Figure 2: Front and back of the apparatus.
Figure 3: Sides of the apparatus with a cutout hole for the electronics cables.
Figure 4: Assembled base of the apparatus.
Figure 5: Heat lamp mount for the apparatus.
LIGHT MOUNT ASSEMBLED

Apply wood glue and nail or screw together. It is often easier to predrill a small hole (pilot) before screwing together. The light socket mounts on the bottom side of the horizontal piece with two screws.

Pilot drill two holes about 1 or 2 inches apart and 1 inch from the bottom for mounting to the base of the platform.

Figure 6: Assembled heat lamp mount for the apparatus.
Figure 7: Photos of the assembled apparatus.
Figure 8: The four components of the circuit shown as their physical appearance and circuit diagram equivalent. Left to Right: npn phototransistor, diode, resistor, relay.
Figure 9: The photo-sensing circuit utilizing a phototransistor as a binary switch to indicate to the Arduino digital pin 2 whether the rodent tail is blocking (0) or not blocking (1) the transistor. The wires are shown as black lines. Wire connections to the Arduino are shown.
Figure 10: The light powering circuit uses the Arduino digital pin 12 to supply 5 volts for actuating the relay and turning the heat lamp on/off.
Figure 11: A photo of the circuit used. The breadboard has adhesive for mounting, and the Arduino has screw holes for mounting.

Heat Lamp

Power cord for lamp

Ground to relay

transistor

diode

relay

5 Volts

Pin 2 sense

Pin 12 to operate relay

resistor

Ground

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