Assembling a Niftymitter v0.24

by **royshearer** on December 11, 2009

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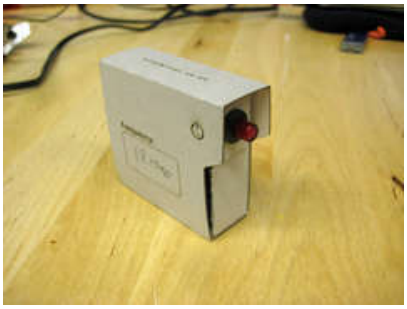
Intro: Assembling a Niftymitter v0.24

This instructable will guide you through assembling a Niftymitter v.0.24, a small open source FM transmitter. More information on the design can be found at www.openthing.org/products/niftymitter .

For this you will need an assembled Niftymitter v0.24 PCB, switch and the lasercut nets for the circuit box, battery tray and sleeve components.

- Housing layouts v0.24 [.svg]
  - The layouts are designed to be laser cut and engraved, or cut and scored by hand. They are designed for ~1mm cardboard and can be assembled by folding and gluing with a quick drying adhesive such as UHU.

Tools:
Soldering kit, fast drying adhesive (UHU), a small insulated screwdriver or trim tool.



File Downloads

niftymitter 0.24 housing layouts.svg ((1405x2362) 125 KB)
[NOTE: When saving, if you see .tmp as the file ext, rename it to 'niftymitter 0.24 housing layouts.svg']

step 1: Fold the circuit box into shape and glue.

Get your assembled board and make sure the two 103 capacitors are nice and flat to accommodate the switch as describe in fig1.

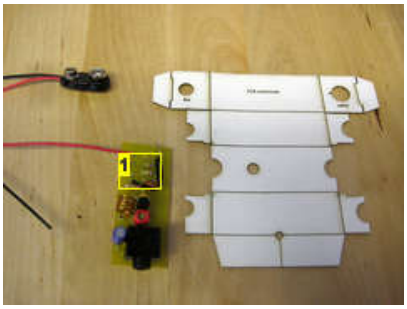
Make all folds on the cardboard net to loosen things up and place circuit board upside down as shown against the main tab of the box (fig4).

Apply tow little blobs of glue and glue to close the box, holding firm until the glue is dry.

While doing this you can make sure the circuit board is flush against the side marked 'PCB underside' and close the end that the line in socket sticks through (fig8). This will help to locate the circuit board - it helps to push from the other side to encourage the socket through the hole (fig9).

When you are sure the glue is dry, close the switch end. make sure the PP3 black wire and the ground wire from the board are sticking through the hole with as much slack as possible (fig 10 and 11).

The end flaps are re-openable with care. The main glued tab will pull apart with force if required, but is generally not yet designed to be undone.



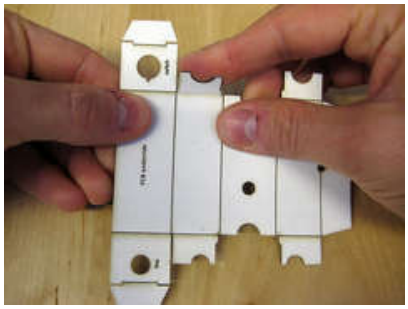
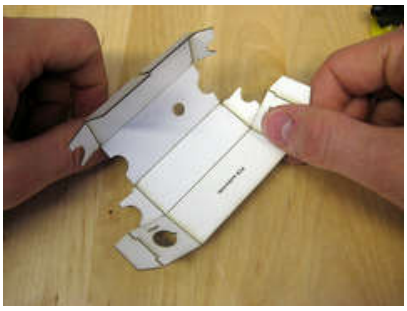
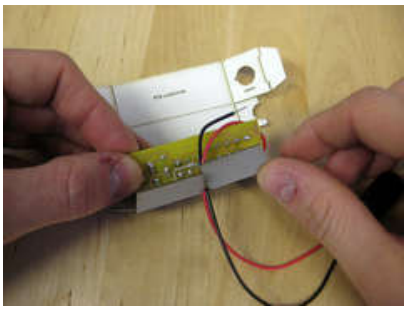
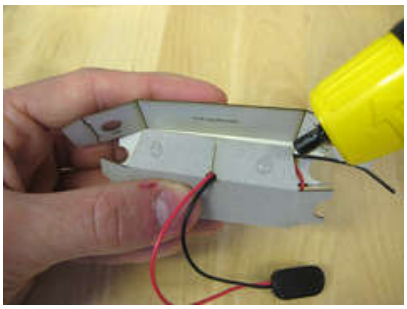
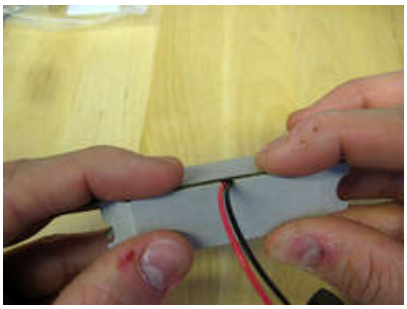


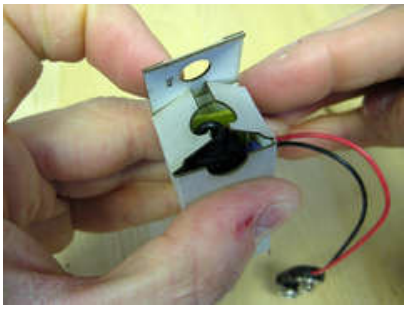
Image Notes
1. Capacitors folded down, away from switch hole.

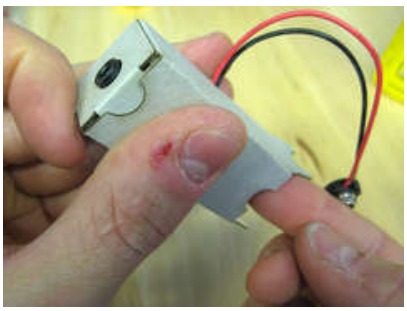


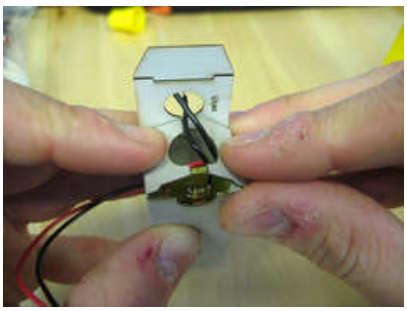


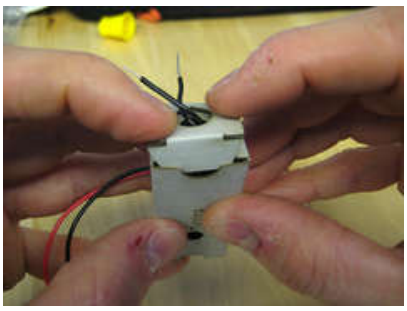










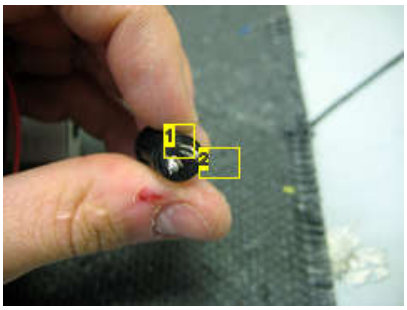


step 2: Attach the switch

Firstly, identify the legs of the switch as described in the first picture. Loop the corresponding wire through each leg and solder. Despite using black for both wires, I can identify the PP3 clip lead because it is made up of multiple cores twisted together, unlike the single core jumper wire I use to connect to ground on the PCB.

Then insert the switch. Ensure that the locating ridge on the switch lines up with the notch in hole. It is a tight squeeze in the circuit box, so take care with this step and use a small screwdriver to manipulate the wires and PCB to accommodate the switch. Once the way is clear, the switch should slide in without resistance and grip in place.

The switch can be removed at disassembly simply by pulling it out. The switch will have to be desoldered to completely disassemble Niftymitter.



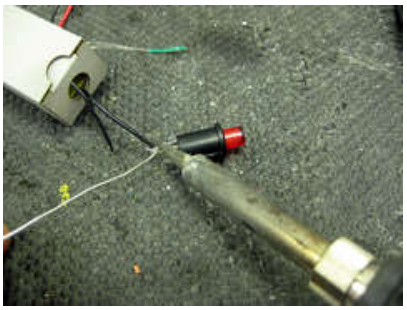
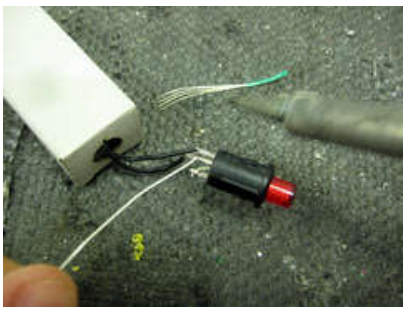
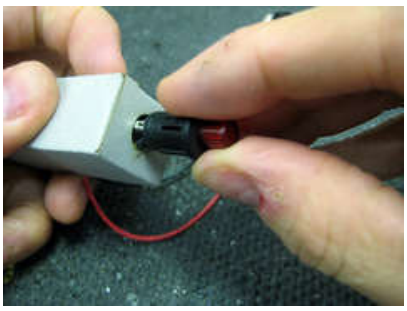


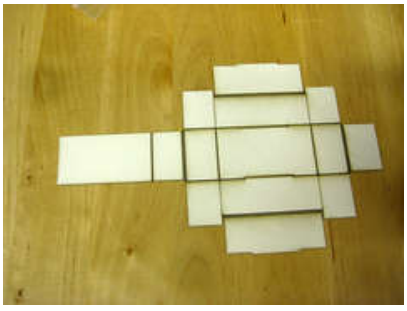
Image Notes
1. negative LED leg - connect to battery negative.
2. free switch leg - connect to ground of circuit

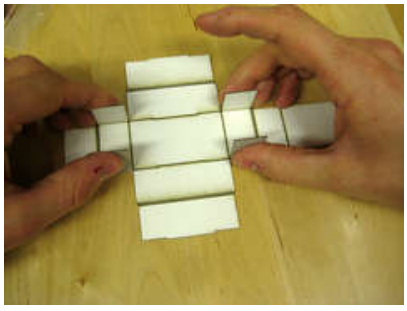


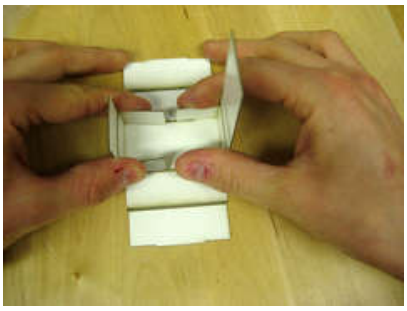


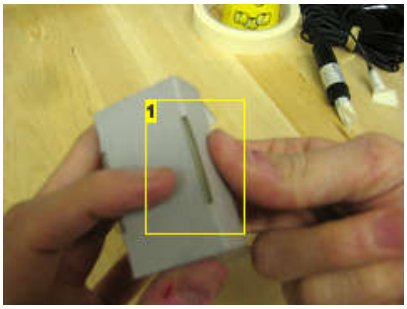
step 3: Fold the Battery Tray into shape

Fold the battery tray together as shown in the pictures. The sides lock by fitting into the slots at the bottom of the tray. Ensure that these bits slot in well (pic 7).









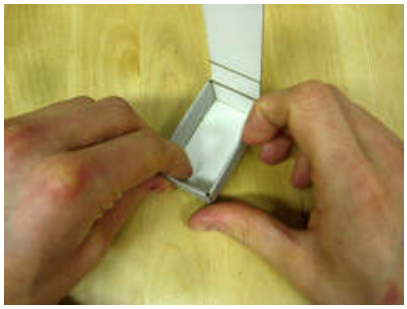


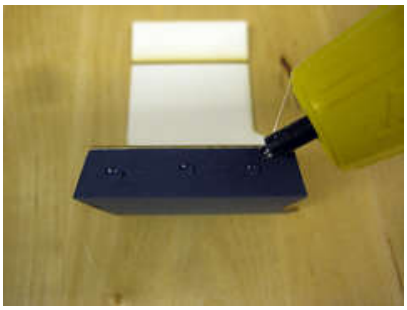
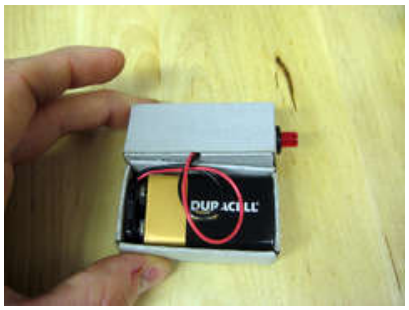
Image Notes
1. locate the bottoms of the internal walls well in the slots at the bottom of the tray.

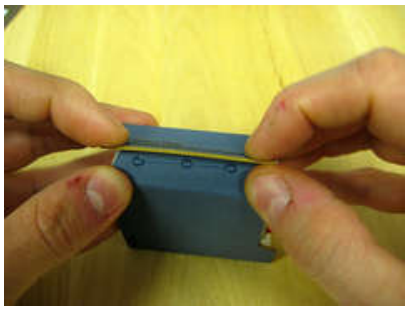
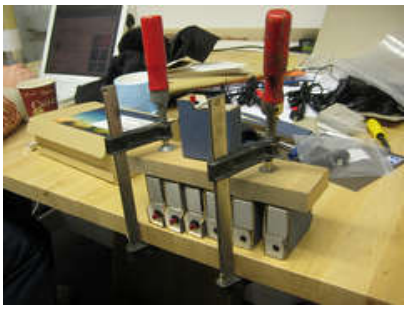
step 4: Fold the Sleeve into shape and glue.

Take your sleeve net and fold all scored lines to lososen up the net.
Arrange the circuit box and battery tray as shown, with or without battery, and use as a former for the sleeve.

Apply three wee blobs of glue as shown, close the net and apply pressure until the glue is dry. Fig7 shows one method of doing this for a batch of Niftymitters.



step 5: Test and tune Niftymitter

Attach a 9V 'C' type battery to the PP3 clip and turn on the transmitter. Turn over the circuit box to access the tuning control. Use a small 3mm slot headed screwdriver or a trim tool to adjust the 'trimcap' . This is a small brass coloured component accessed by the hole marked 'tuning'. Clockwise for up, andticlockwise for down, it only requires very fine adjustment.

Place a radio receiver at least 2m way and tune it to the desired frequency. Then carefully adjust the trimcap until silence is heard at the receiver. Test the signal by moving the receiver or transmitter away from each other to ensure you have not tuned into a harmonic signal.