

**CHERNOBYLIZER by Isn'tses****Build guide and BOM**

The Chernobylizer is straightforward to build but you must take care to get everything in the right place. ALWAYS DOUBLE CHECK COMPONENTS BEFORE SOLDERING AS DE-SOLDERING IS TROUBLESOME. SAVE YOURSELF TROUBLE :) BE SURE BEFORE SOLDERING.  
Further info on this circuit and its development can be found at [www.isntses.co.uk/blog](http://www.isntses.co.uk/blog)

**Step 1. Resistors:**

Insert the resistors first, bend the legs close to the blob to ensure they fit nicely. Before soldering, check that each resistor is in the right place. (You can look up the colour codes to double check. <https://www.hobby-hour.com/electronics/resistorcalculator.php> is a good online resistor calculator.)

R2, R3, R7, R8, R9, R10, R11, R12, R19, R22, R23, R24, R25, R26, R27, R28	x 16	100k
R1	x 1	22r
R14, R20, R21	x 3	1k
R15	x 1	5k1
R13	x 1	15k
R16	x 1	22k
R18	x 1	174k
R17	x 1	220k
R5, R6	x 2	2m2
R4	x 1	5m6

**Step 2. IC Sockets**

When inserting the chip sockets ensure they are correct with the notch at one end matching the notch on the PCB. Ensure the number of pins match the number of holes and are fully inserted so the socket is flat against the PCB. Hold or tape them firmly in place before soldering and solder two corner pins first followed by the rest of the pins. Ensure there are no solder blobs joining any of the pins together.

U1, U3	x 2	14-pin DIP socket
U2, U4	x 2	8-pin DIP socket
U5	x 1	16-pin DIP socket

**Step 3. Capacitors: ceramic disc & film capacitors - non-polarised**

Ensure you check the values on the capacitors.

C4, C5, C19	x 3	4.7nF (aka 4700pf) - Code: 4n7 or 472
C1, C2, C3	x 3	10nF (aka 10000pf) - Code: 103
C22	x 1	47nF (aka 47000pf) - Code: 47n or 473
C13, C20, C21, C23, C24, C25, C29	x 7	100nf (aka 0.1uF) - Code: 104

**Step 4. Electrolytic capacitors - polarised**

These are cylindrical, the negative side is indicated by a white stripe and a shorter leg. Match the stripe with the white half-circles on the PCB. Important: If inserted the wrong way, the circuit will not function correctly. DOUBLE CHECK POLARITY AS UNSOLDERING THESE IS COMPLICATED.

C18	x 1	1uF
C14, C27	x 2	10uF
C15, C28	x 2	47uF
C6, C11, C12, C26	x 4	100uF
C16	x 1	220uF
C7, C8, C9, C10	x 4	1000uF

**Step 5. Diodes**

D3: Match the stripe on the diode to the stripe on the PCB (and the square solder pad.)  
LEDs: Match the shorter leg with the square solder pads on the PCB. If you are uncertain, search "LED polarity diagram" online.

D1, D2	x 2	3mm LED
D3	x 1	Diode 1N5817 (DO-204AL)

**Step 6. Jacks and switch**

The jack sockets should fit in easily with the silver side on the outside. The switch can go either way around. Check all legs are in properly before soldering.

J2	x 1	DC barrel jack socket - 2.1mm pin
J3, J4	x 2	PJ301BM 3.5mm mono jacks
SW1	x 1	SPST miniature toggle switch

**Step 7. Potentiometers**

The pots should clip firmly into place. The pots are DIFFERENT VALUES, ensure these are in the correct place according to the value. Ensure legs are correctly inserted and straight before soldering.

RV1	x 1	"Liquidator" - 1k 9mm potentiometer, linear taper
RV2	x 1	"Bio-robot" - 10k 9mm potentiometer, linear taper
RV3, RV4	x 2	"Metallik" & "Mystikal" - 100k 9mm potentiometer, linear taper
RV5	x 1	" Berserk" - 500k 9mm potentiometer, linear taper

**Step 8. ICs**

Insert the IC's into the sockets. Ensure they are inserted the right way up, matching the notch on the socket. Ensure all legs are all straight and none are bent over or outside their holes. (Take care to insert U2 and U4 in the correct position as they look similar)

U1, U3	x 2	CD40106BE - DIP-14
U2	x 1	LM386 audio amplifier - DIP-8
U4	x 1	LM358 op amp - DIP-8
U5	x 1	CD4046BE phase locked loop - DIP-16

**Step 9. Test the circuit**

CHECK ALL SOLDER JOINTS, ENSURE CHIPS ARE IN CORRECTLY. Make sure the switch is in the up position. Turn all 5 knobs fully clockwise. Connect the left-hand output socket to a mono input of a mixer or amplifier. Turn the volume to a fairly low setting and connect the 9v power to the Chernobylizer.

If you don't see the LEDs light up, or don't hear anything, immediately unplug the circuit and check your solder joints and that the components are all inserted properly.

If the circuit is working properly you should hear a continuous drone/noise which rises in pitch then slowly falls. Play with the other controls and touch the touchpads. The right LED eye should be on continuously and the left eye should flicker in relation to the sound output.

You should have a fully functioning synth, this is incredible and you are a noise master.

If it is not working common problems may include: missed solder joint, dry solder joint, chips not inserted correctly, wrong power supply, polarity of capacitors not correct.

More info: [isntses.co.uk](http://isntses.co.uk) - [isntses.bandcamp.com](http://isntses.bandcamp.com) - [isntses.etsy.com](http://isntses.etsy.com)

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