ASSEMBLY GUIDE / YOUR KIT

Buddybox

Build the base, add the controls, then check the wiring before closing the case.

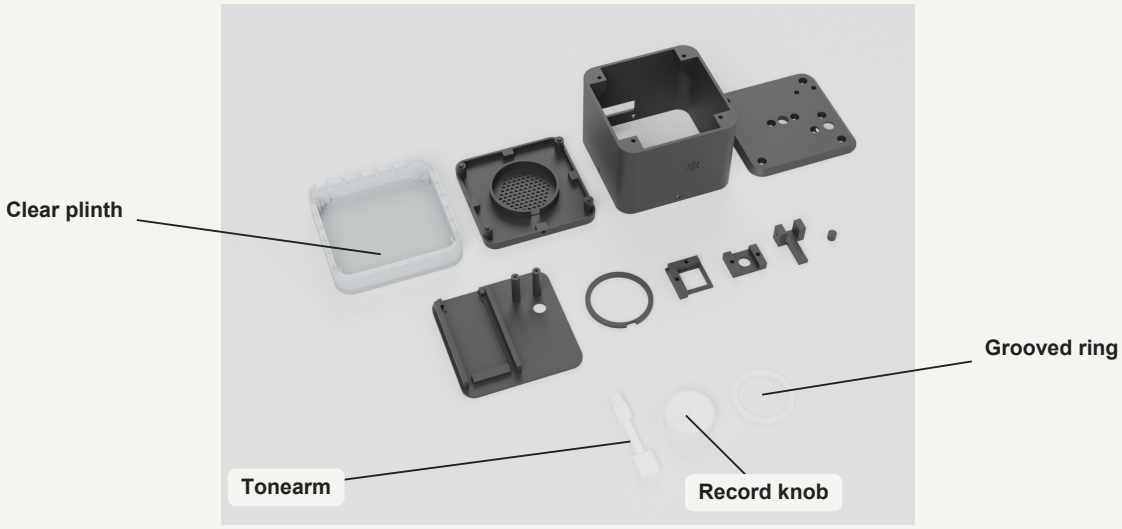


Disconnect USB power throughout assembly. The kit includes all 13 printed parts, electronics, screws, pivot pin, feet, headers, connecting leads and heat-shrink. Bring a soldering iron and solder, small screwdrivers, flush cutters and a USB-C data cable. Firmware is not included.

Assembly first. Follow the physical stages in order. Firmware installation and app setup are separate. Keep USB disconnected while fitting parts or changing wiring.

PHYSICAL BUILD / 01

1. Lay out the parts



Thirteen printed parts. Original CAD layout; colours are illustrative.

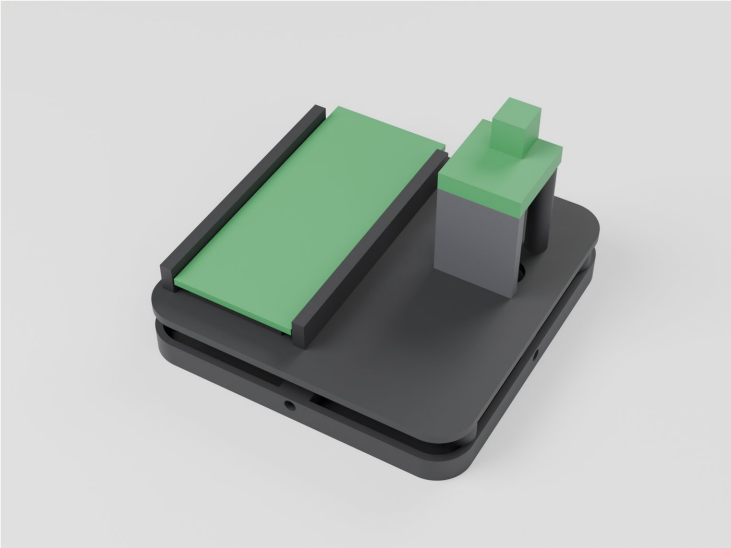
Printed parts	Electronics	Hardware
Body, lid, base, deck, speaker ring, hinge, switch bracket, encoder bracket, stem cap	ESP32-S3 DevKitC-1 N16R8 dual USB-C, INMP441 microphone, MAX98357A amplifier with screw terminal, 40 mm 8 ohm speaker	Four M3 x 6 base screws; two M3 x 6 encoder screws; four M3 x 8 lid screws; two M3 x 10 hinge screws; two M3 x 5 switch screws
Record knob, grooved ring, weighted tonearm, clear plinth	KY-040 encoder, MX switch, 8 x 8 WS2812 matrix, leads	Four M2 x 4-6 screws for mic and amp; one embedded M3 nut; one supplied ready-to-fit pivot pin (1.75 mm diameter, about 15 mm long); four adhesive feet

All hardware in this list is supplied. Check the parts before starting; contact the shop if anything differs or is missing.

Check: Identify the microphone opening, rear USB access and all brackets before fastening anything. The lid needs enough wire length to remain open during assembly.

PHYSICAL BUILD / 02

2. Prepare the base and electronics



Speaker below the deck; S3 and amplifier above it. Green blocks show module envelopes, not connector locations.

1. Use the supplied headers and connecting leads. Solder the headers and switch and matrix leads where they are not already fitted. Attach the speaker leads to the amplifier's screw terminal. Check the USB-to-5Vin power path for the exact ESP32-S3 board before changing any jumper; do not bridge an unidentified jumper.

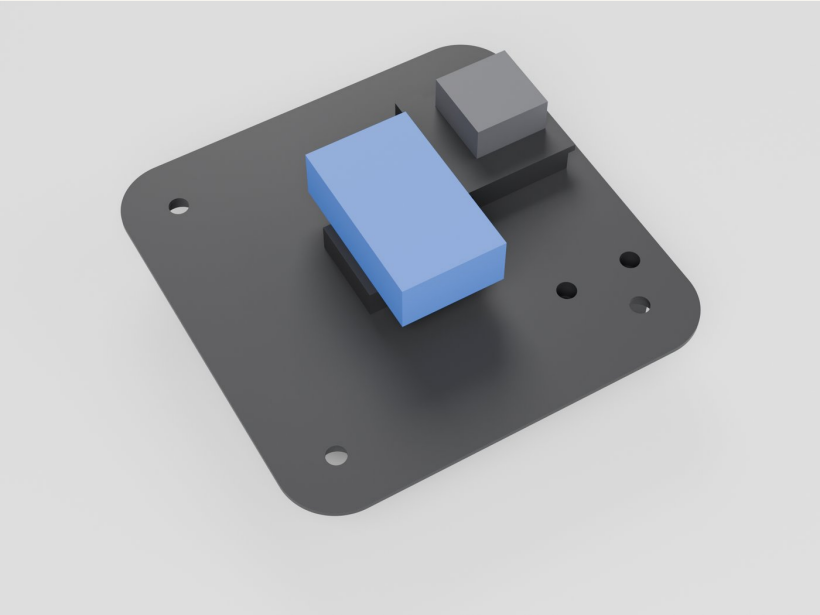
2. Place the speaker cone-down over the base's hole field and seat the speaker ring. Seat the S3 in the deck, pins upward and USB toward the rear. Fasten the amplifier to the deck with two M2 screws, then place the deck on the base posts.

3. Mount the microphone behind the front grille with two M2 screws, its sound hole facing the grille. Lower the body over the base and deck, then install the four M3 x 6 base screws from the sides.

Check: The speaker faces the holes, the microphone has a clear path to the grille, and the USB connectors remain accessible. Do not trap leads between the body and base.

PHYSICAL BUILD / 03

3. Assemble the lid



Lid underside with switch and encoder envelopes. Match the mounting holes and check cable clearance before closing.

1. Clip the MX switch into its bracket with its clips left and right. Secure the bracket from the lid top with two M3 x 5 screws.

2. Fit the KY-040 into its bracket using its nut. Secure the bracket from the lid top with two M3 x 6 screws.

3. Attach the hinge from the lid underside with two M3 x 10 screws. Keep the lid open for wiring.

Check: The switch operates freely and the encoder turns and clicks without rubbing. Orient the lid so its screw holes align and the USB opening and microphone grille remain clear; check the controls move freely before tightening.

PHYSICAL BUILD / 04

4. Connect and inspect

Use these connections with matching firmware. The matrix connects to GPIO8 and USB 5Vin. Use the supplied panel and wiring. If the panel or its connector labels differ from this guide, contact the shop before powering it.

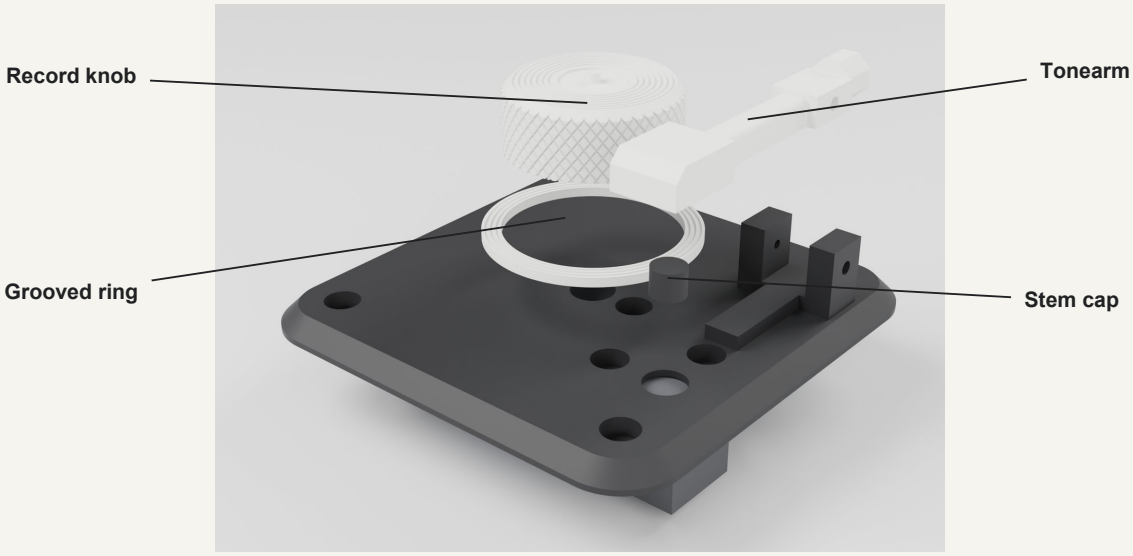
Part	Signal connections	Power
INMP441	SCK to GPIO4; WS to GPIO5; SD to GPIO6; LR to GPIO7	3V3 and GND
MAX98357A	BCLK to GPIO15; LRC to GPIO16; DIN to GPIO17	5V and GND
KY-040	CLK to GPIO10; DT to GPIO11; SW to GPIO12	3V3 and GND
MX switch	One side to GPIO13; other side to GPIO14	-
Matrix	DIN to GPIO8	5Vin and GND

Matching firmware must drive GPIO7 and GPIO14 LOW; they are not ordinary interchangeable ground labels. Connect the lid controls and route the matrix cable through the plinth's rear notch and USB slot toward the controller. Confirm access and cable length with the case open before committing to this routing. Keep connections insulated and away from moving parts.

Check: Match each lead to the actual board labels; check for loose strands, pinched wires and correct polarity. Confirm the matrix is on the 5V supply and its data lead is on GPIO8.

PHYSICAL BUILD / 05

5. Close and add the turntable



Turntable parts above the lid: stem cap, tonearm, ring and knob.

1. Once the connections and cable route are confirmed, close the lid and install the four M3 x 8 corner screws. Stop if a wire is trapped.

2. Fit the stem cap. Place the tonearm between the hinge lugs over the cap. Insert the supplied pivot pin through the outer lug and hub into the far lug. It should sit flush without being forced.

3. Lay the grooved ring around the shaft and press the record knob onto the D-shaped shaft.

4. Place the matrix LEDs-down in the plinth, fit the four feet and seat the body in the plinth collar.

Check: The tonearm moves freely, the knob rotates and clicks, and the body sits flat without pulling the matrix cable. This is a mechanical inspection; setup is separate.

PHYSICAL BUILD / 06

6. Final inspection and setup

Before connecting USB, check the wiring and polarity, insulated joints, free movement of the controls and clearance around the lid and matrix cable. If a part or connection differs from this guide, contact the shop before powering the build. Once assembled, continue with your chosen compatible firmware and app setup separately; no firmware is included in the kit.