

Arplus – Build Manual

1 Introduction

You can always find the latest version of this build manual on <https://zlosynth.com/arplus-build-manual.pdf>.

This kit contains a printed circuit board (PCB) with all the surface mount device (SMD) parts already pre-soldered. The through-hole components are left to be assembled by you.

Pay attention to the orientation and position of all the parts. Desoldering them would be difficult and may break the module. Also, use care not to touch the pre-soldered SMD parts with the soldering iron. Read through the whole manual first. Make sure you understand all the steps before you start soldering.

Electronic components are sensitive to static electricity. Before handling the PCB, ground yourself by touching a grounded metal object or use an anti-static wrist strap.

2 Tools required

- Soldering iron
- Masking tape
- Side-cutters

3 Bill of materials

Start by unpacking all baggies into a bowl so you don't lose any components.

- 1 × Front panel
- 1 × PCB (the black board)
- 1 × Daisy Patch Submodule (the yellow board)
- 4 × Green D-shaped potentiometer, nut, washer, and knob
- 6 × Blue trim potentiometer
- 7 × Tactile button
- 12 × 3.5mm jack socket, nut and washer
- 8 × Red LED
- 1 × Male connector 2×5
- 4 × Female connector 2×5

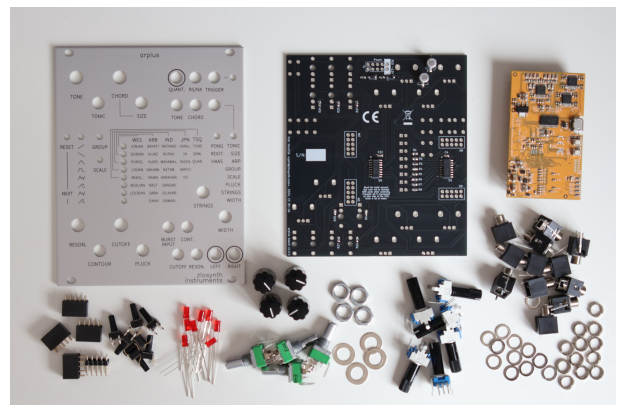


Figure 1: All the components laid out

4 Power

Solder on the power connector.

1. Take the male 2×5 connector and put the side with shorter legs through the footprint marked with a white stripe and a label “RED -12V”. Make sure to put it on the marked side of the PCB.
2. Solder a single pin in and check that the connector is upright. If it is not, heat up the pin and align the connector by pushing it against the board.
3. Solder all the pins in.

5 Daisy Patch Submodule

The Daisy Patch Submodule is connected to the main PCB through a set of connectors.

1. Mount the four female 2×5 connectors on the pins of the Daisy Patch Submodule. See Figure 2.
2. Plug the mounted connectors into the black PCB through footprints marked as “SM”. Make sure to put them on the correct side of the PCB, where all four connectors are marked.
3. Solder all the pins in.
4. Once done, carefully detach Daisy Patch Submodule to prevent it from getting damaged while progressing with the build. It may be a little difficult. Pull each connector by a millimeter at a time. The result is illustrated in Figure 3.

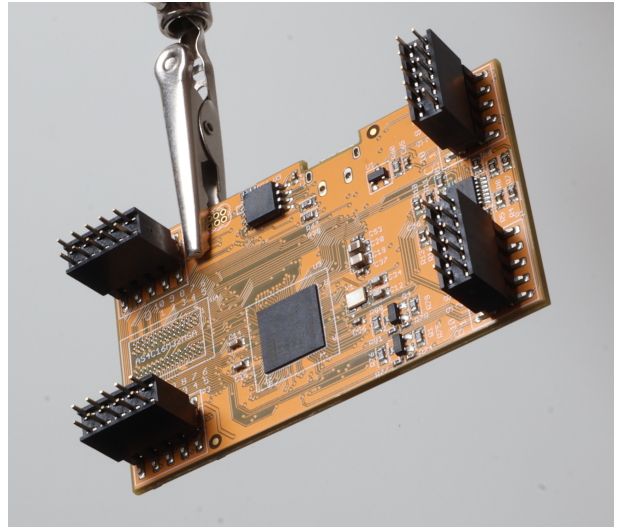


Figure 2: Connectors mounted on the submodule

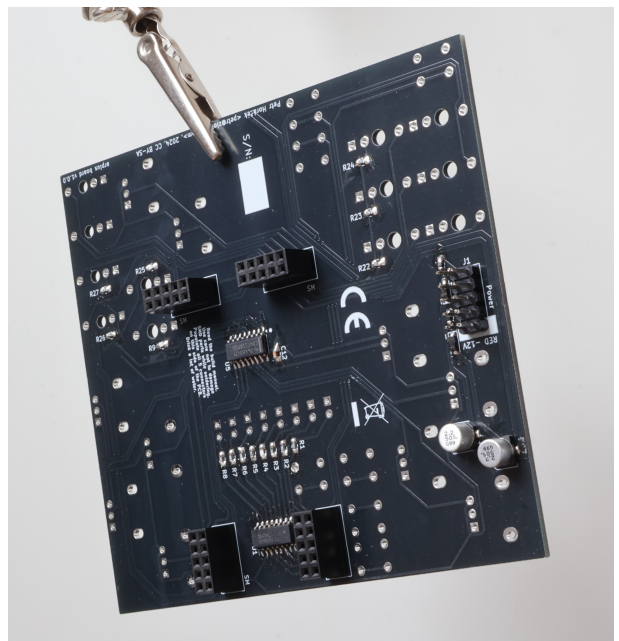


Figure 3: The power and submodule connectors

6 Inspection

Visually inspect all solder joints before continuing with the build. Look for the following problems:

- Missed connection – a pin that was not soldered at all. Fix it by adding solder to the joint.
- Cold joint – a dull, grainy, or lumpy joint instead of a smooth shiny one. Fix it by reheating the joint until the solder flows again. Add a small amount of fresh solder if needed.
- Solder bridge – excess solder connecting two adjacent pads or pins that should not be connected. Try reheating the bridge and separating the pads with the tip of the soldering iron. Alternatively, place solder wick over the bridge, press it with a hot iron, and lift the wick away to absorb the excess solder.

If you spot a problem, fix it before moving on.

7 Front panel

Now when all the internal parts are soldered, the next step is to assemble parts sitting in the front panel.

1. Snap in the buttons.
2. Place the 4 green D-shaped potentiometers in “Green pot” footprints. If the big legs are hard to snap in, flatten them with pliers first.
3. Similarly, place the 6 blue trimmer potentiometers in the “Blue pot” footprints.
4. Put all jack sockets into the PCB.
5. Put LEDs in place. Pay attention to the markings on the PCB explaining their correct orientation.
6. Now when all parts are in, carefully put the front panel on them. Be patient aligning all parts so they fit through holes. If you see that some are not getting through, use tweezers to align them. Leave the LEDs hanging freely in their holes for now.
7. Put washers on the pots and jacks.
8. Secure the panel by tightening all the potentiometers and 3.5mm jack sockets in place with their nuts. Use care not to scratch the panel. Plastic tools are preferred, and steel drivers should also serve well. If you only have pliers, put them in a thick plastic bag. Protect the panel!
9. Confirm that all the buttons can be easily clicked and return to their resting position. If they don't, loosen the potentiometers and jacks, and realign the panel.

Once all the components are placed correctly, move on to soldering.

1. Solder in all the potentiometers and jacks.
2. Solder all the buttons.
3. Use a masking tape on the portion of the panel with holes for LEDs, see Figure 5. Push the LEDs against the tape, so they are even with the panel surface.
4. Solder the LEDs. Then snap their legs off and remove the tape.

Repeat the inspection procedure described in Section 6.

8 Knobs

You can now put knobs on the potentiometers.

1. Put black knobs on the potentiometers. Align them with the D-shaped shaft and press them in. You may need to pull them a little bit if you see they are scratching the nut.

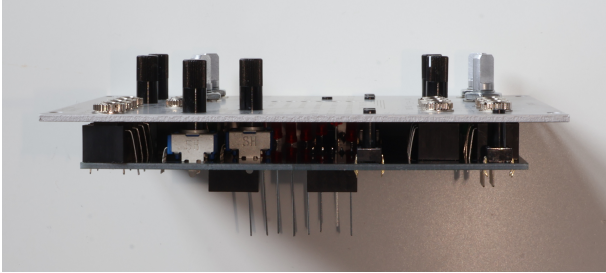


Figure 4: Side of the panel before soldering

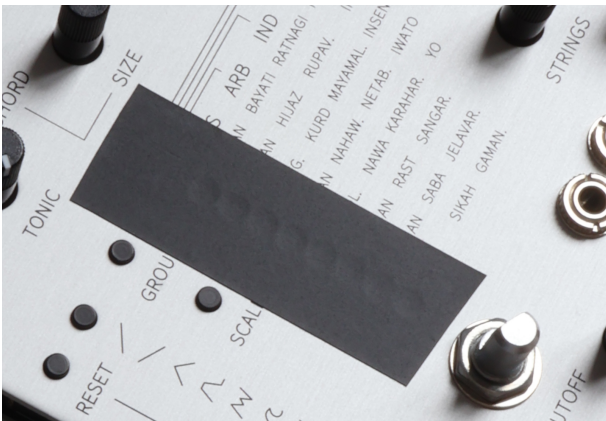


Figure 5: Taped LED holes

9 Final assembly

Connect the Daisy Patch Submodule to the main black PCB to complete the build.

10 Testing

Before powering up the module, perform these checks to prevent damage:

- Always connect power with the system off. Verify the red stripe on the ribbon cable aligns with -12V on the PCB.
- If you can, test the module in an isolated case first to prevent damage to your entire Eurorack system if there are assembly errors.

11 Congratulations

The module is now complete. Have fun!

You can find the user manual on <https://zlosynth.com/arplus-user-manual.pdf>.

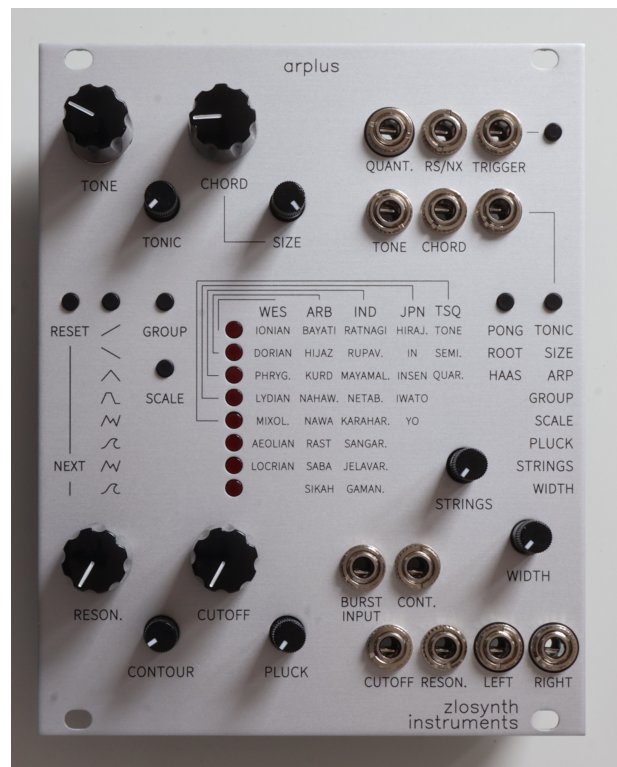


Figure 6: Front view of the assembled module