

COSMOS

Build Instructions

V1.0



KIT CONTENTS

Thank you for purchasing Cosmos DIY Kit. Cosmos is a new kind of module that will help you to creating complex modulation, sounds, patterns with ease and will lead you to new sounds territories.

BEFORE ASSEMBLING YOUR KIT, MAKE SURE YOU HAVE ALL THE COMPONENTS.

- 01**-Faceplate
- 02**-PCB Control Board
- 03**-PCB Main Board

BAG A

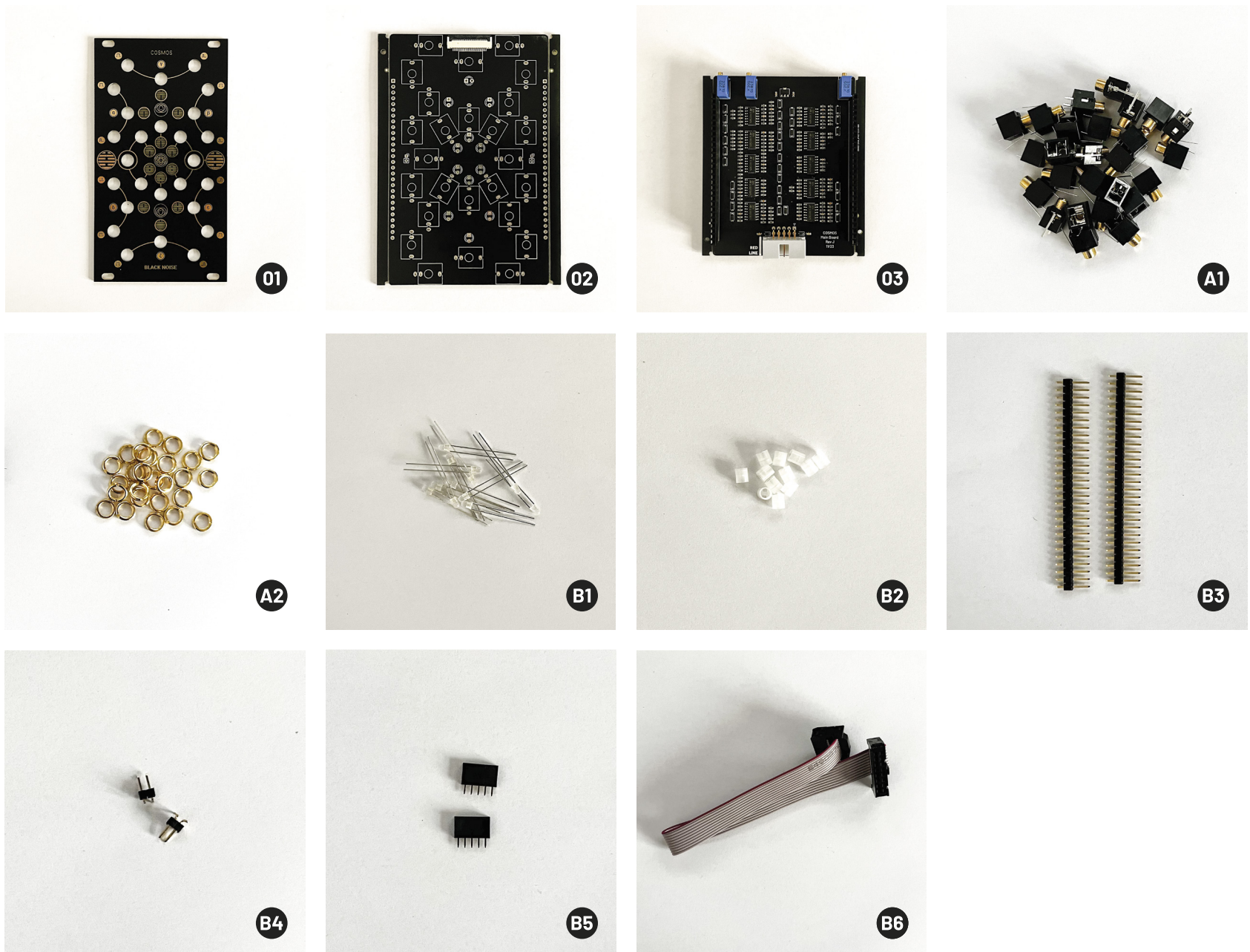
- A1**-Jack Socket **26pcs**
- A2**-Jack Nuts **26pcs**

BAG B

- B1**-LED Dual R/G **12pcs**
- B2**-LED Spacers **12pcs**
- B3**-PinHeader 1x28 **2pcs**
- B4**-PinHeader M 1x2 **2pcs**
- B5**-PinHeader F 1x5 **2pcs**
- B6**-Power Cable **1pcs**

WARRANTY

BLACK NOISE warrants the contents of this kit to be free of defects in materials or workmanship and to be conform with the specifications at the time of shipment for a period of two years from the date of purchase. We do not warrant, and we do not repair or take in modules to troubleshoot end-user DIY build faults or second hand DIY products. BLACK NOISE cannot be held responsible for any damage caused by one of our DIY kits and resulting from an end-user DIY build faults.



A1

FACEPLATE

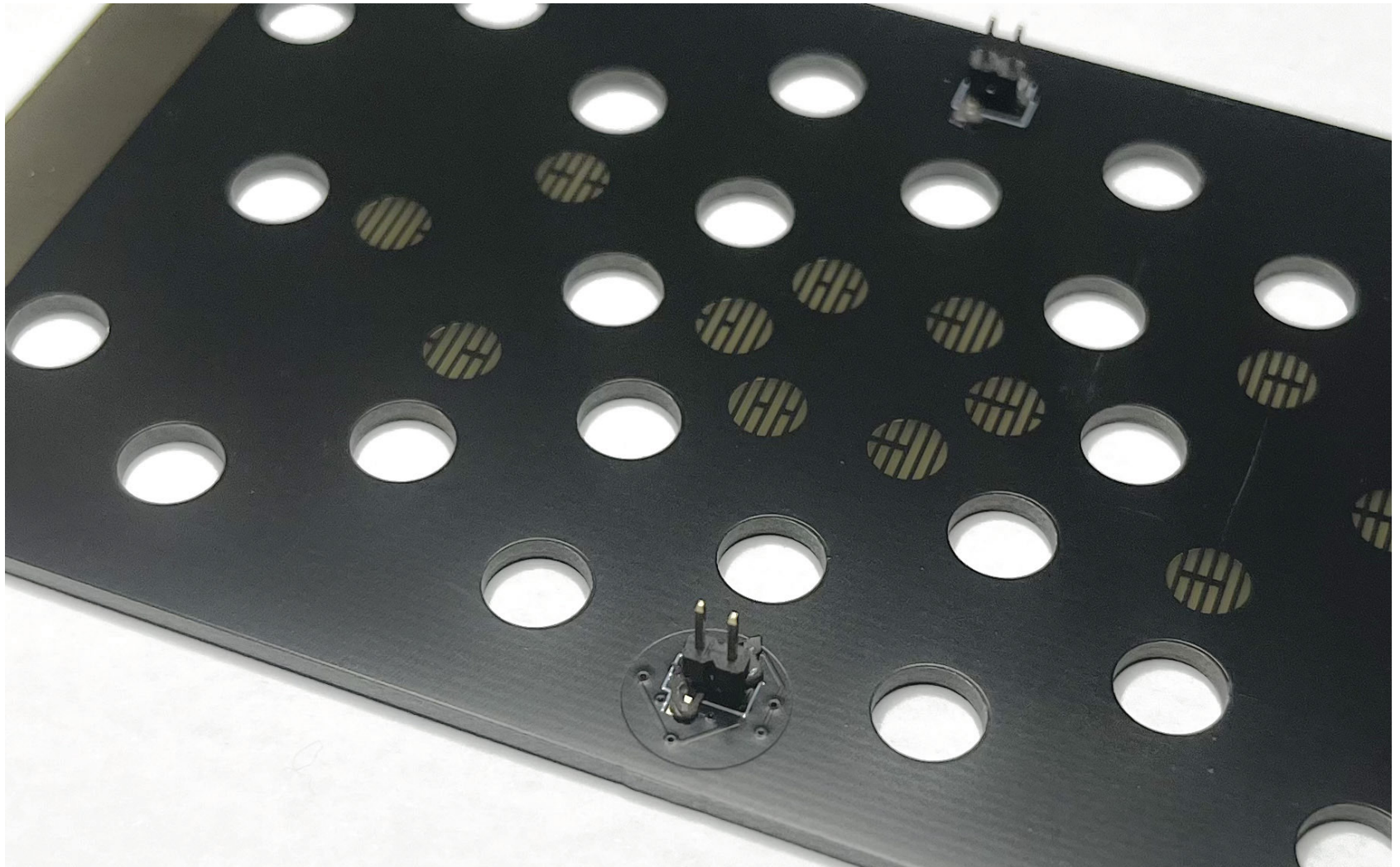
First we will prepare the faceplate. The **B4** connectors must be surface soldered on the back of the Faceplate.

To solder the connectors we recommend using solder paste. If you do not have solder paste you can also use solder wire.

If you use solder paste place a small amount of paste on each of the faceplate pins then place the connectors. hold the connector perpendicular to the faceplate using pliers and solder one of the pins with a soldering iron. When the first pin has cooled, solder the second pin then repeat these steps for the second connectors.

If you use soldering wire, prepare a blob of tin on the tip of your iron, hold the connector perpendicular to the faceplate with pliers and solder the first pin of the connector. When the first pin has cooled, solder the second pin then repeat these steps for the second connectors.

Once the two connectors are soldered clean the flux residue with Isopropyl Alcohol and a clean brush.



B1

CONTROL BOARD

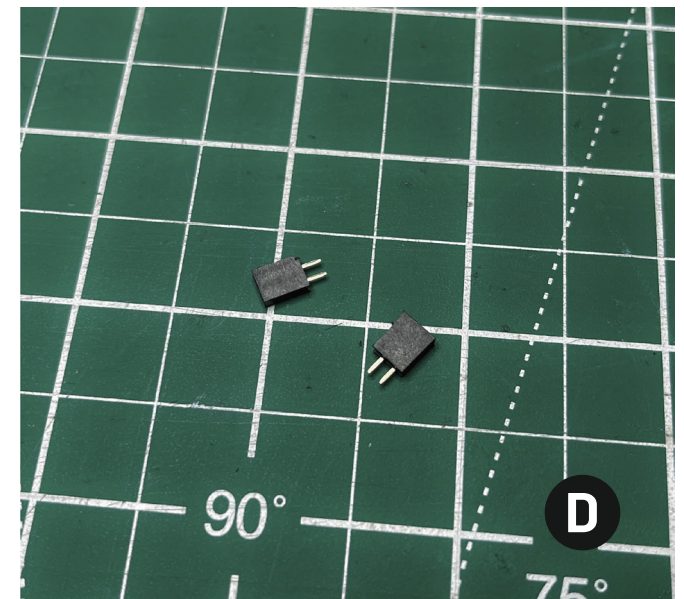
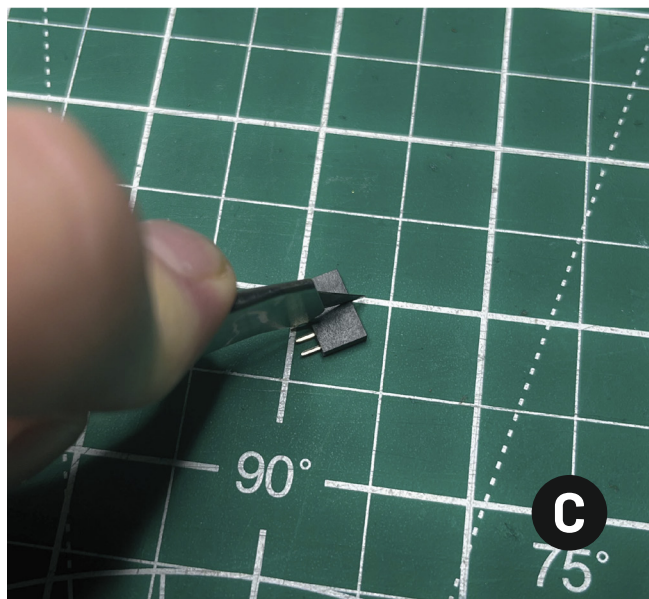
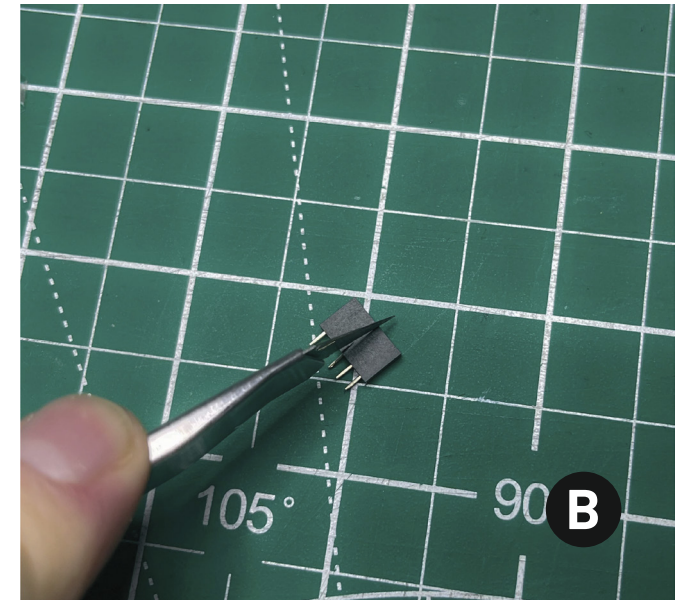
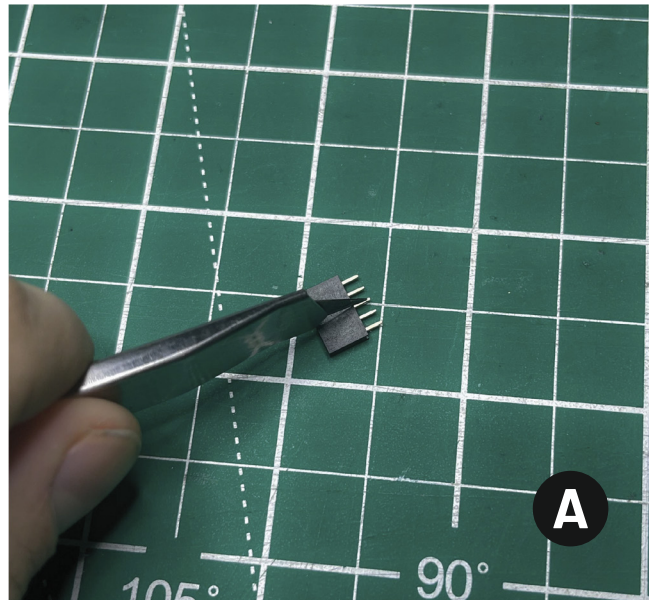
The **B5** connector must be cut to form two two-pin connectors from a single **B5** connector. The kit includes a 2nd B5 connector in case the 1st connector is not cut correctly.

To separate the single **B5** connector into two separate connectors, use a cutter and apply pressure on the end of pin 3 as shown in picture **A**. It is not necessary to apply a lot of pressure as the plastic of the connector is quite soft. If you apply too much pressure you risk breaking the connector.

Once you see a small notch spot the same operation on the other end of the pin as in picture **B**. Turn the connector over and repeat the operation on each end of pin 3 as in picture **C**. Once each end of pin 3 has been cut, the connector should break along pin 3 to form two connectors as in the picture **D**. If this is not the case, repeat the previous operation applying a little more force for each cut.

Once you have two connectors of 2 pins each as in photo **D** you can move on to the next step.

If the connector does not separate neatly into two connectors, use the 2nd **B5** connector provided and repeat the previous steps.



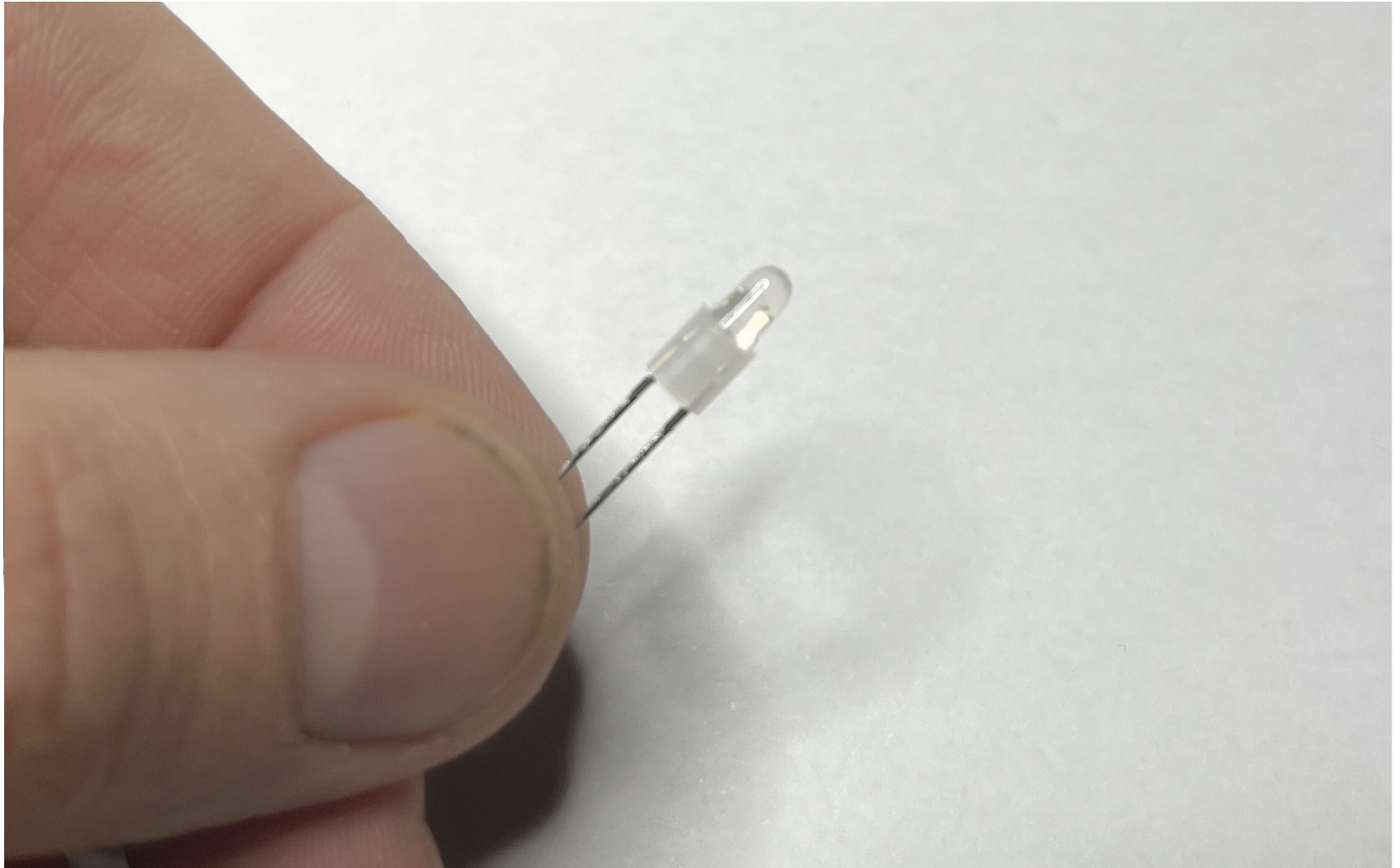
B2

CONTROL BOARD

In the kit you will find 12 LEDs **B1** and 12 spacer LEDs **B2**.

Start by placing one LED Spacer on each of the LEDs. The spacers do not have any particular orientation, just make sure to pass each of the LED legs into the holes of the LED Spacer.

Once the twelve LED spacers are installed, you can move on to the next step.



B3

Mount the PCB of the control board on a vice or a 3rd hand. You can use the edge rails of the PCB to hold it as in picture **A**. Make sure you have space under the PCB for the LED legs to hang.

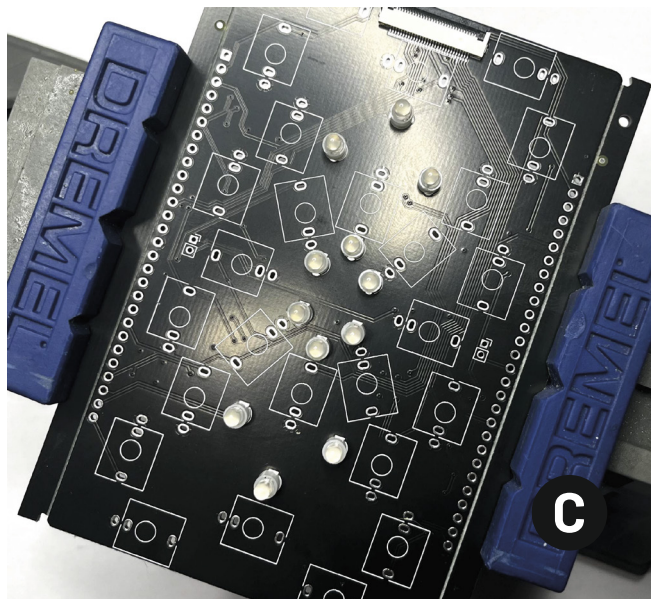
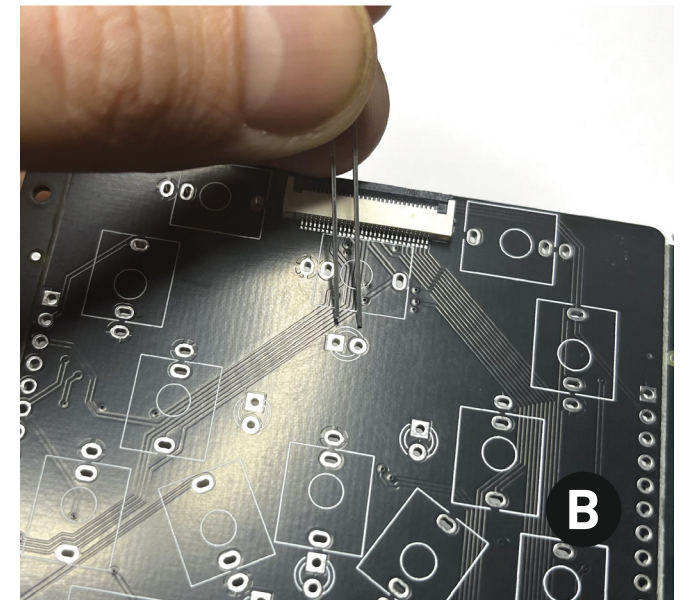
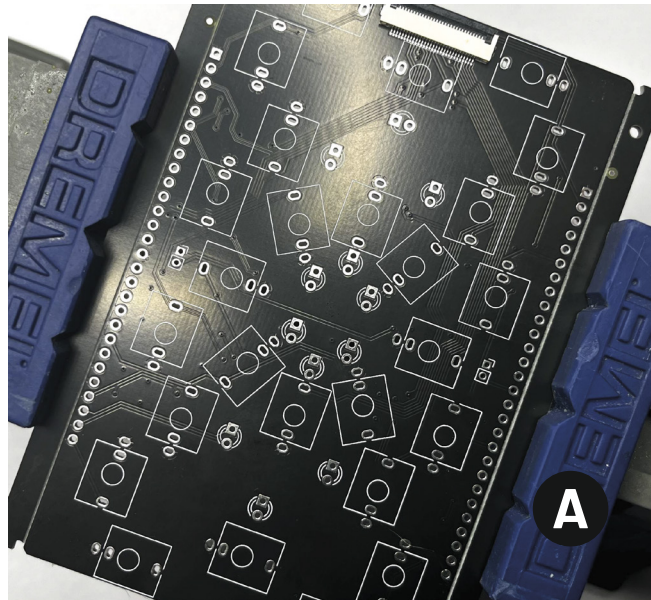
Start by placing the LEDs

PAY ATTENTION TO THE POLARITY OF THE LEDs.

LEDs have one leg shorter than the other called the cathode, make sure to place the cathode in the square shaped hole as in picture **B**. Then place the remaining LEDs as in picture **C**. Once all the LEDs are placed, gently turn your PCB over to ensure that the polarity of each LED is respected.

Once you are sure that all the LEDs are correctly installed you can move on to the next step.

CONTROL BOARD



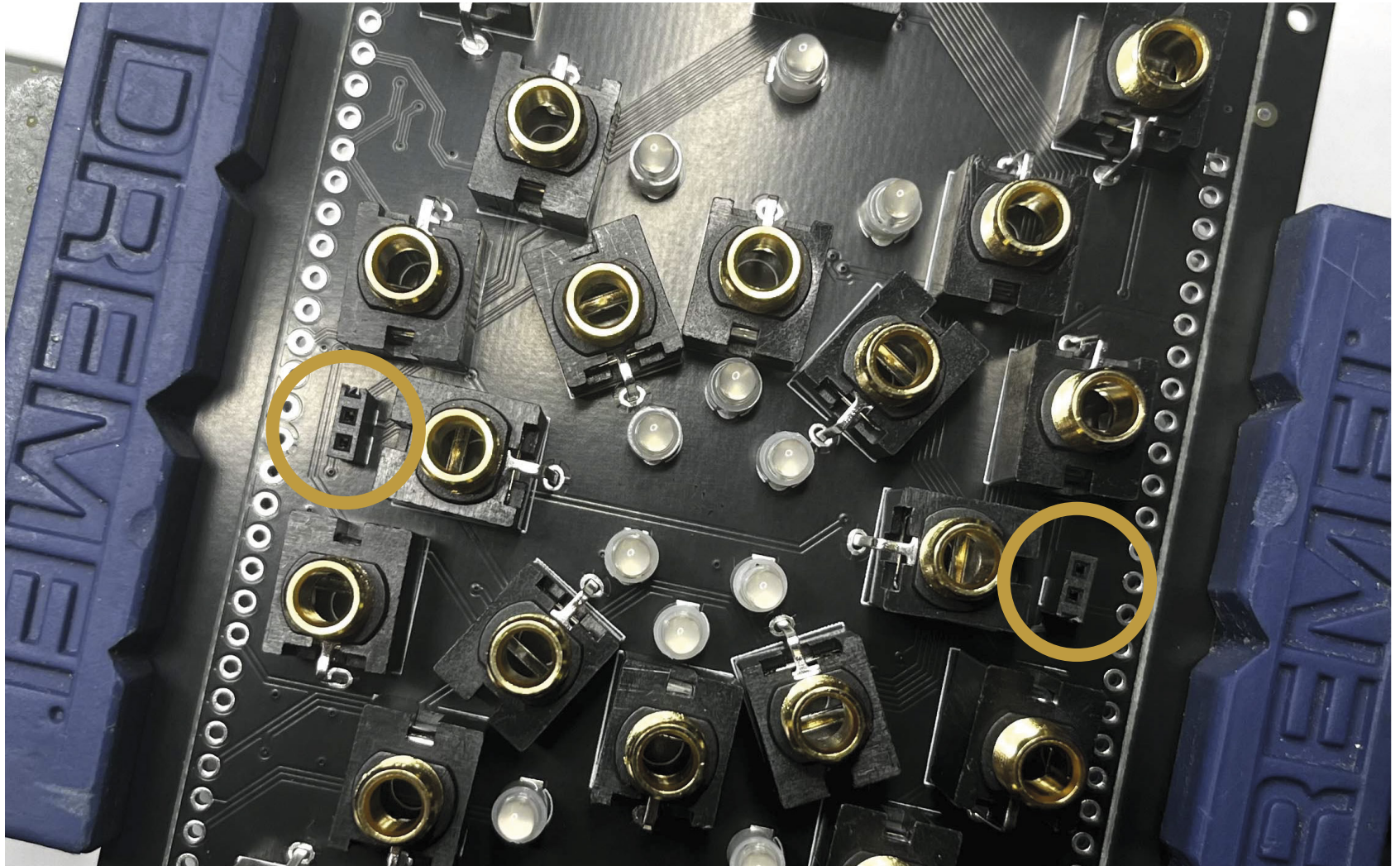
B4

CONTROL BOARD

Once all the LEDs are installed, install the 26 jack connectors **A1**.

Once all the jack connectors are installed, place the **B5** connectors cut out in step **B1**. See the picture to find the location of the **B5** connectors.

Once the jack connectors and the **B5** connectors are installed, proceed to the next step.



B5

Once the jack connectors and the **B5** connectors are installed, you can place the faceplate.

PAY ATTENTION TO THE ORIENTATION OF THE FACEPLATE. The connector for the expander in picture **A** indicates the top of the module. When you place the faceplate make sure that the name of the COSMOS module written at the top of the module match the expander connector as in picture **B**. When placing the faceplate make sure that the **B4** pin-header of the faceplate soldered in step **A1** is nested with the **B5** connector installed in step **B4**

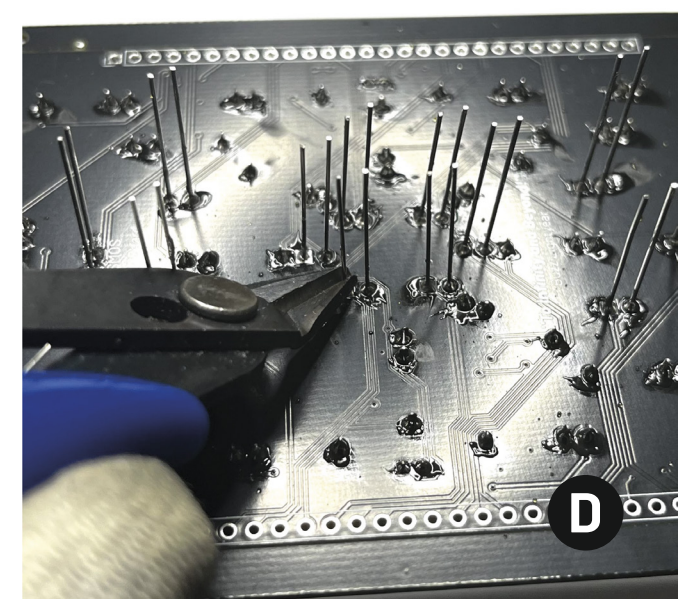
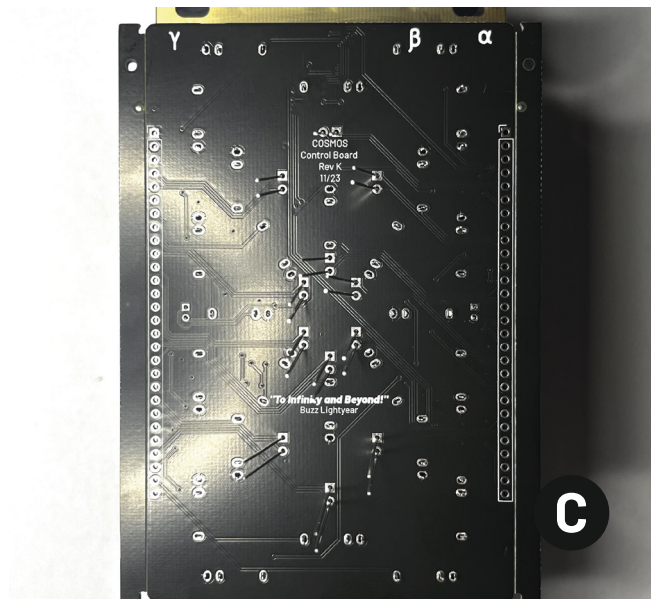
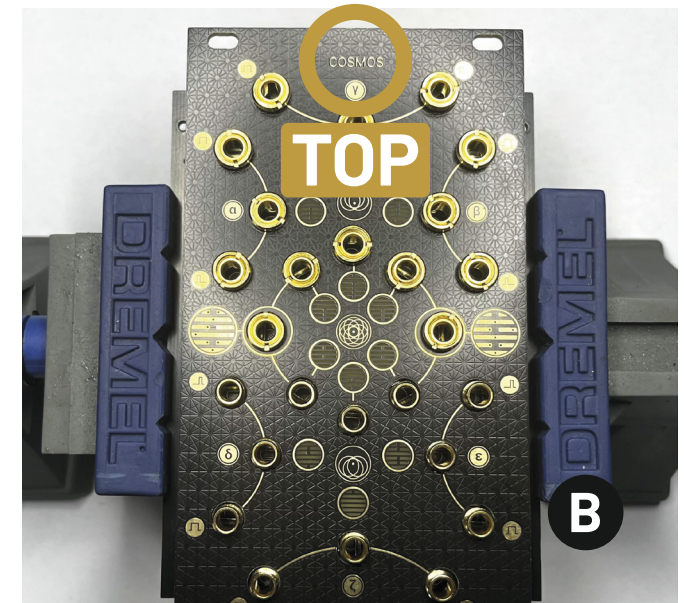
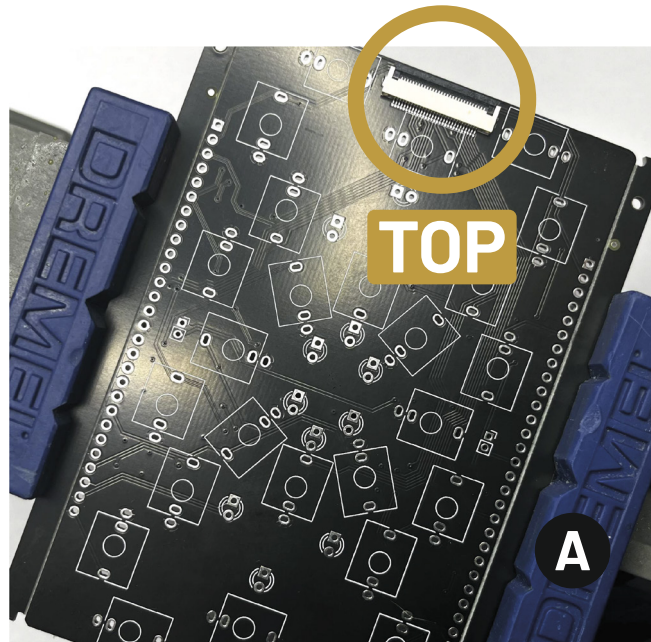
Once you have made sure that the faceplate is correctly installed, screw the 26 **A2** nuts onto each of the jack connectors.

When all the nuts have been screwed, turn the PCB over and solder the components starting with the jack connectors, then the **B5** connectors and finally the LEDs. Before soldering each component make sure it is flush with the PCB.

Once all the components are soldered, make sure that there are no solder bridges, cold solder joints or unsoldered pins. When you are sure that each component has been soldered correctly, cut the LED legs using pliers as in picture **D**.

Finally clean all flux residue with isopropyl alcohol and a clean brush. You can then proceed to the next step.

CONTROL BOARD



B6

CONTROL BOARD

You can now remove the edge rails of the control board. Grab one of the edge rails with a pliers and bend it up then down. the edge rails should snap off.

DO NOT PULL THEM OR TWIST THEM, THE EDGE RAILS ARE MADE TO BE REMOVED BY BENDING.

Once one of the edge rails has been removed, repeat the operation for the second edge rail. Once both edge rails have been removed you can move on to the next step.



C1

You can now prepare the main board, first remove the two edge rails as in step **B6**.

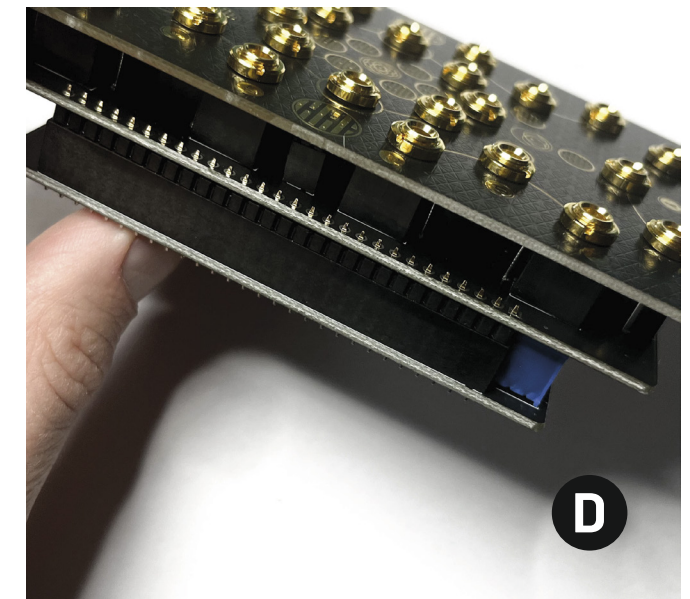
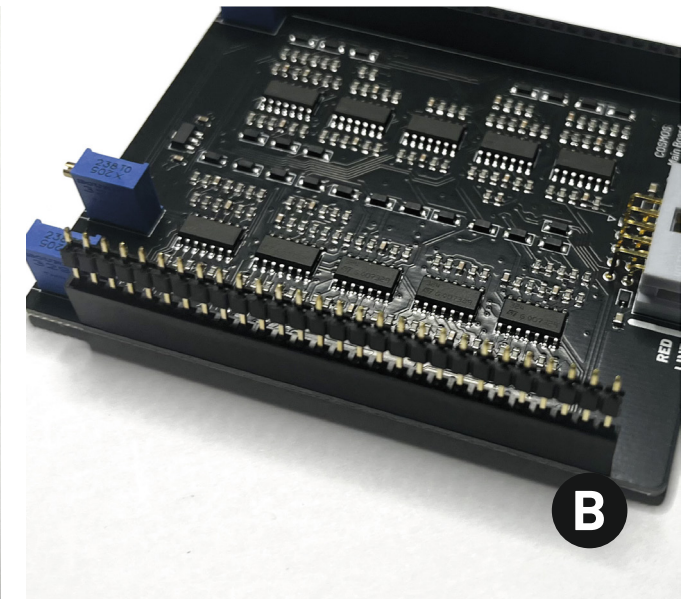
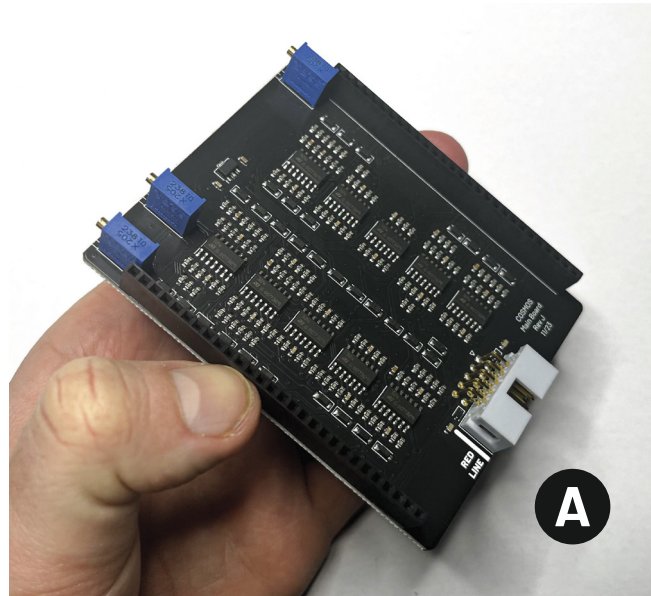
Once the edge rails are removed you can snap the **B3** pin-header onto the main board. Make sure to snap the longest part of the pin-header into connector like on picture **B**. Once one of the pin-headers is snapped, repeat the operation for the second pin-header.

Once both pin-headers have been installed you can place the control board on the pin-headers.

PAY ATTENTION TO THE ORIENTATION OF THE TWO BOARDS. the module name COSMOS is on top of the main board, make shure to align it with the COSMOS name on top of the faceplate.

Once both boards are correctly aligned, make sure that the pin-header is flush with the control board and soldered each of the pins of both pin-headers.

MAIN BOARD



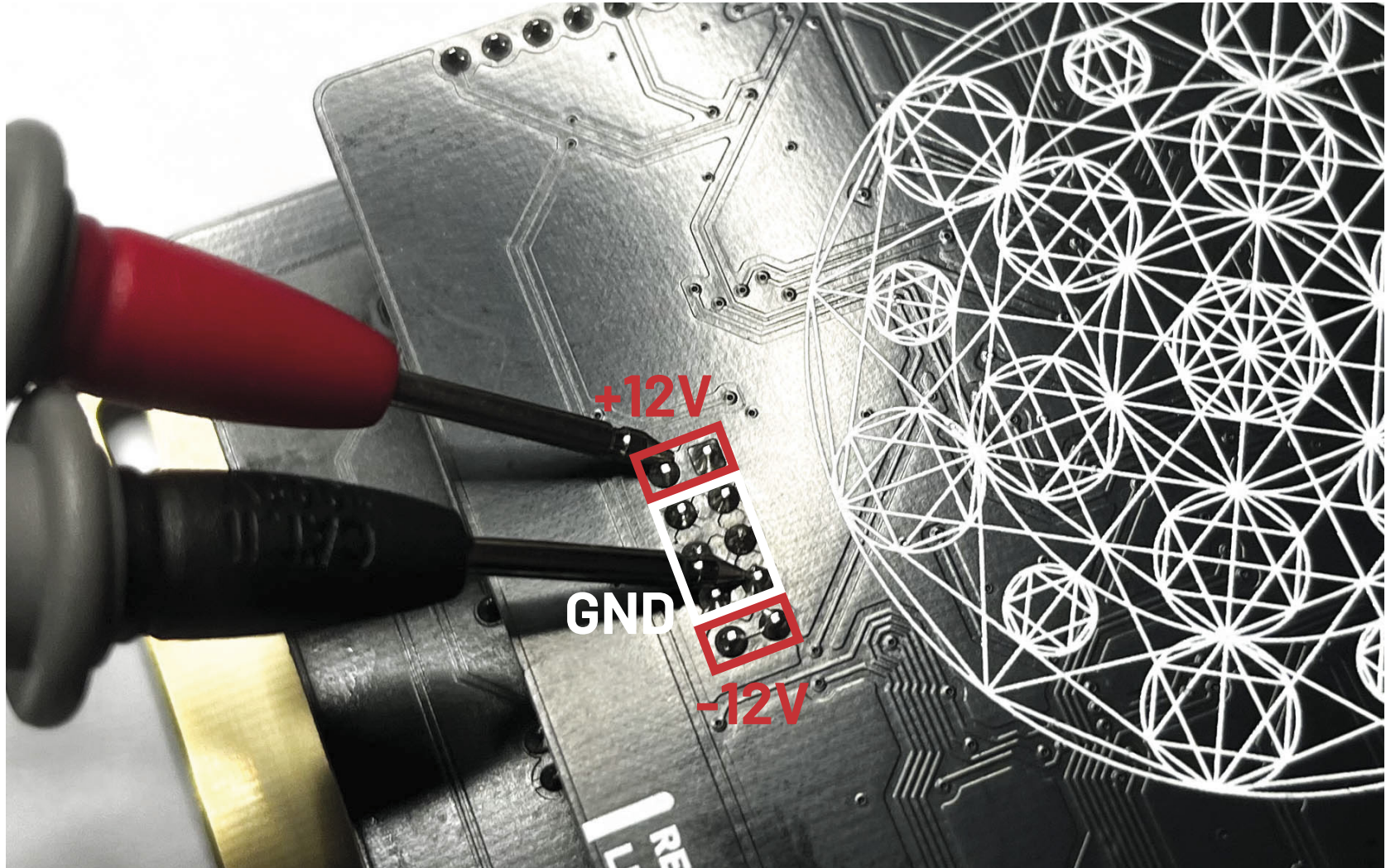
You can now test the continuity of your module. Use a multimeter set to continuity and connect one of the probes to one of the pins in the center of the power connector. With the other probe touch the +12V pins then -12V pins at each end of the connector. Your multimeter should not ring.

Once you make sure that there is not short circuit, you can install the **B6** power cable included in the kit.

ALWAYS USE THE PROVIDED RIBBON TO POWER COSMOS

It has a specific header orientation. Other ribbon won't damage the module, but it will not start. Don't use the provided ribbon to power another shrouded module.

Once connected to your power supply you can proceed to the next step.



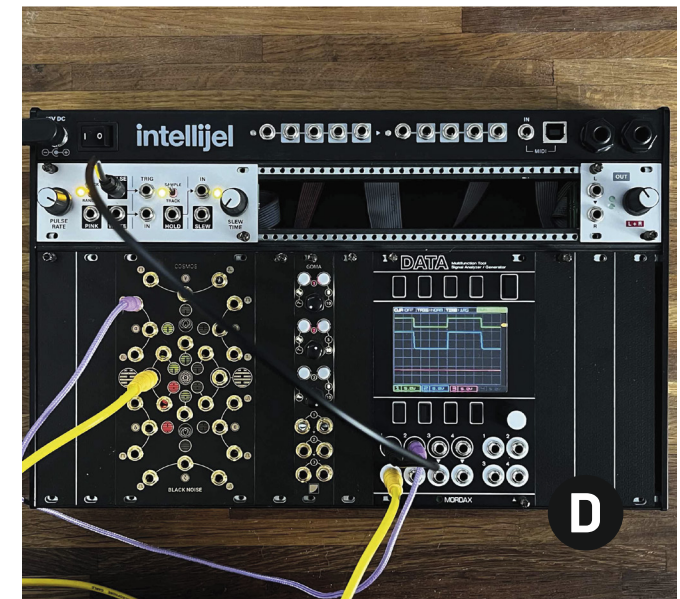
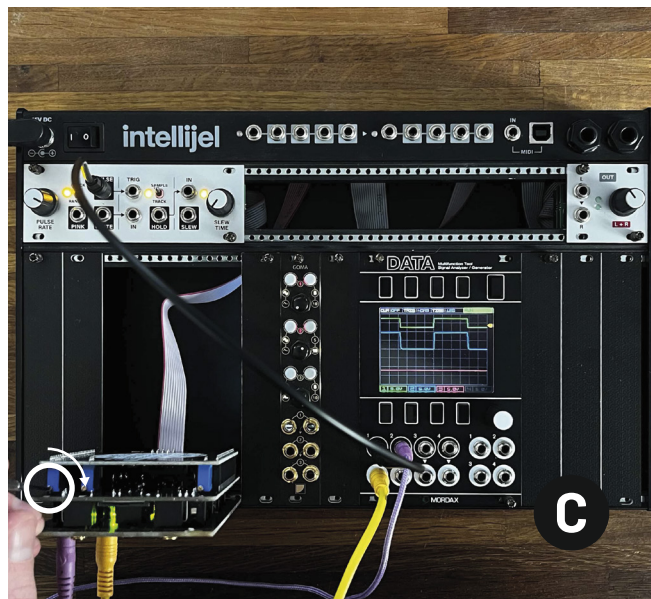
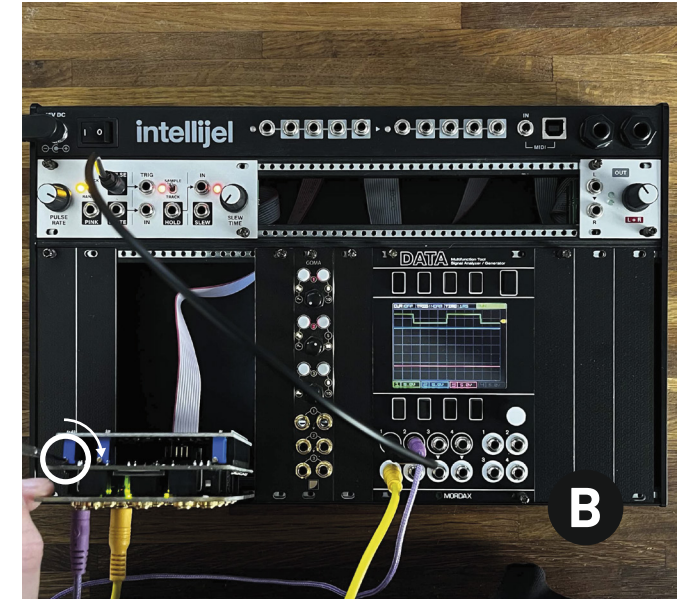
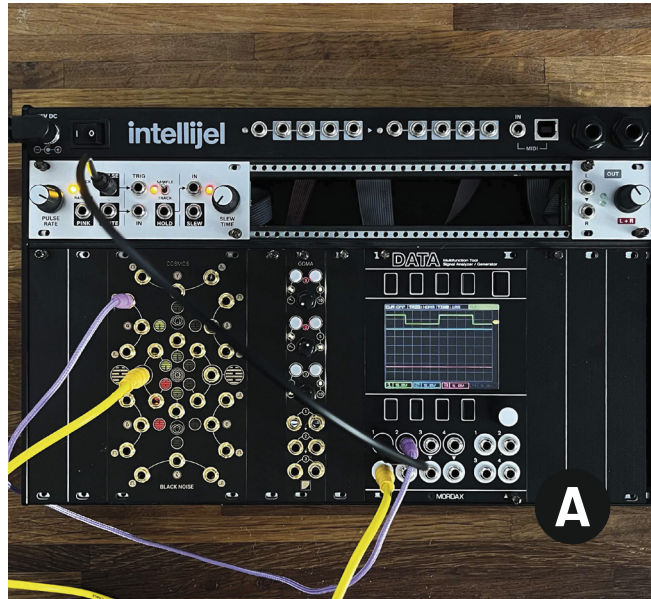
D1

CALIBRATION

FOR THE CALIBRATION OF COSMOS AN OSCILLOSCOPE WITH AT LEAST TWO CHANNELS IS MANDATORY. Here we will use a DATA from Mordax.

We will begin the calibration of your COSMOS with the **A** section. Send gates into input X of COSMOS and leave input Y disconnected. To generate gates you can use the gate output of a keyboard or sequencer. Here the gates are displayed on channel 1 of the oscilloscope (green trace). Connect the gate output of section **A** into the channel 2 input of your oscilloscope.

If the gate output of section **A** is always high like on picture **A**, turn the leftmost trimmer clockwise as in picture **B** until channels 1 and 2 of the oscilloscope display the same gates. Once the gates are the same on channel 1 and 2 turn 1 full turn clockwise and section **A** is complete, you can now move on to the next step.



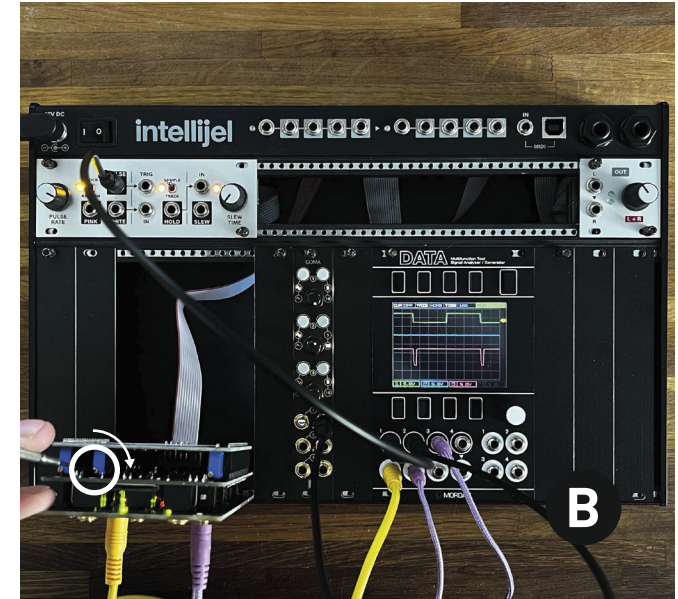
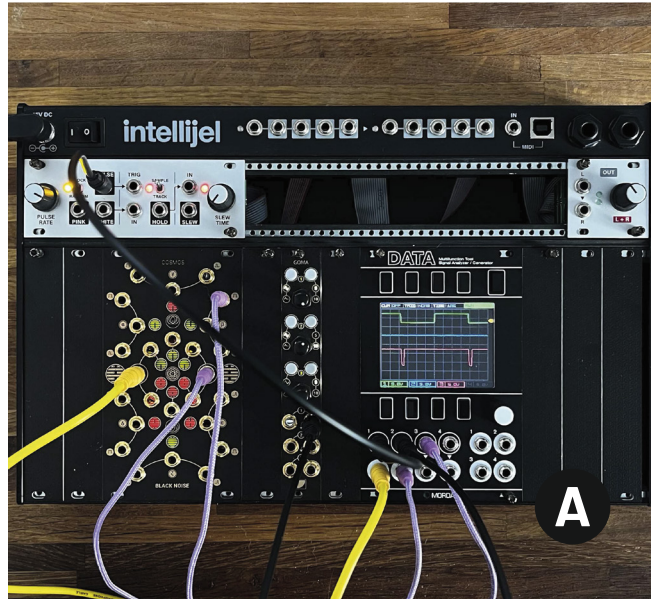
D2

CALIBRATION

FOR THE CALIBRATION OF COSMOS AN OSCILLOSCOPE WITH AT LEAST TWO CHANNELS IS MANDATORY. Here we will use a DATA from Mordax.

To calibrate section β send gates into input X of COSMOS and sent a fixed voltage of +5V into the Y input. In this example channel 1 (green trace) shows the gates sent into the X input, channel 2 (blue trace) the fixed voltage sent into the Y input and channel 3 (red trace) the gate output of the section β .if your oscilloscope only has 2 channels, make sure you send a fixed voltage of +5V to the Y input, use channel 1 to monitor the gates sent to the X input and use the second channel to monitor the gate output.

The gate output of section β must output gates as in picture **C** if this is not the case as in picture **A** turn the second leftmost trimmer clockwise as in picture photo **B** until you obtain gates as in image **C**. Once the gates are the same on channel 1 and 3 turn 1 full turn clockwise and section β is complete, you can now move on to the next step.



FOR THE CALIBRATION OF COSMOS AN OSCILLOSCOPE WITH AT LEAST TWO CHANNELS IS MANDATORY. Here we will use a DATA from Mordax.

To calibrate section γ send gates into input X of COSMOS and sent a fixe voltage of +5V into the Y input. In this example channel 1 (green trace) shows the gates sent into the X input, channel 2 (blue trace) the fixed voltage sent into the Y input and channel 3 (red trace) the gate output of the section γ .if your oscilloscope only has 2 channels, make sure you send a fixed voltage of +5V to the Y input, use channel 1 to monitor the gates sent to the X input and use the second channel to monitor the gate output.

The gate output of section γ must output gates as in picture **B** if this is not the case as in picture **A** turn the the rightmost trimmer counterclockwise until you obtain gates as in image **B**. Once the gates are the same on channel 1 and 3 turn 1 full turn counterclockwise and section β is complete.

You have finished calibrating your COSMOS and you can now enjoy it, congratulations!

To learn more about your COSMOS and find dozens of patch ideas, we advise you to consult the COSMOS user manual available from the resources section of our website.

COSMOS IS A FULLY ANALOG MODULE, IT IS POSSIBLE THAT OVER TIME THE TRIMMERS WILL DETUNE AND THE MODULE WILL NOT BE CORRECTLY CALIBRATED. IF THIS IS THE CASE, FOLLOW THE SAME PROCEDURE TO RECALIBRATE YOUR COSMOS.

