PLUTON MODULAR
ENVade R1.6
BUILD GUIDE

Packing List

COMPONENT	COUNT
Resistor: 150Ω 1/4W	2
Resistor: 1kΩ 1/4W	2
Resistor: 10kΩ 1/4W	2
Capacitor: 100uF 25V	1
14 Pin IC Socket	1
LM324N	1
2x8 IDC Header	1
Red Flat-Topped LED	1
1N4148 Diode	2
Dark Red Knob	2
THONKICONN	2
THONKICONN Hex Nut	2
THONKICONN Washer	2
THONK Tall Potentiometer A50K	2
Adafruit 24MM Red Arcade Button	1
ENVade PCB	1
ENVade Panel	1
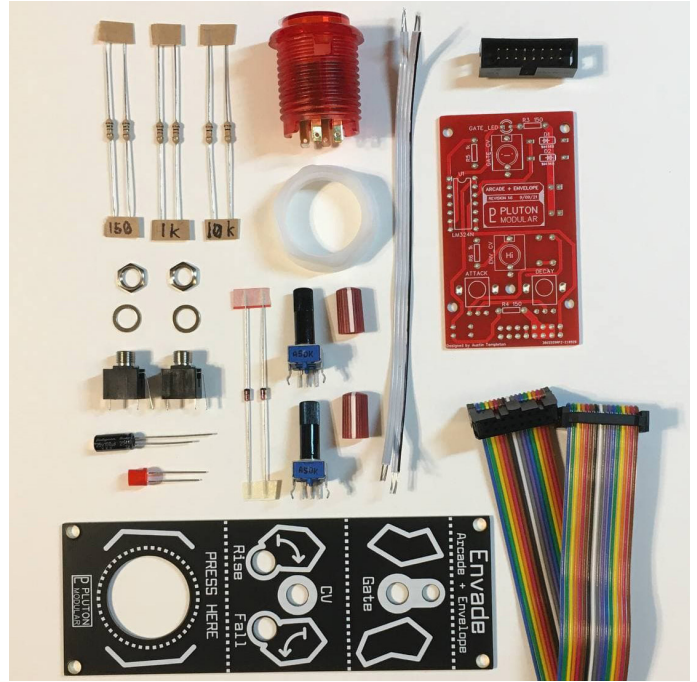
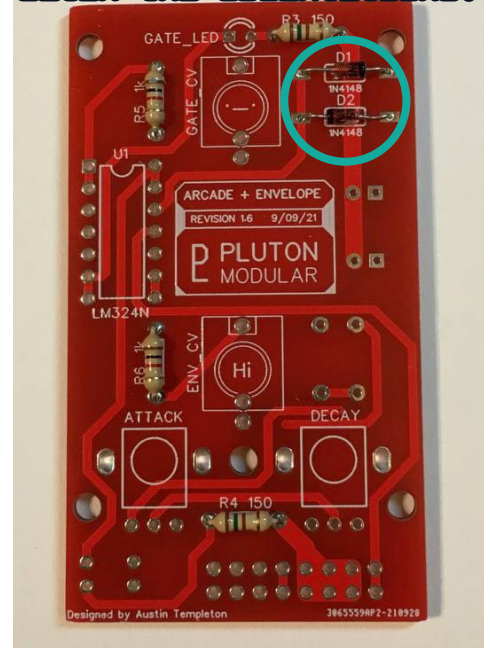## Instructions

Step One – Top components

Solder the resistors and diodes on the top side of the board, being mindful of the diodes' orientation.

It may be helpful to pre-bend the legs.
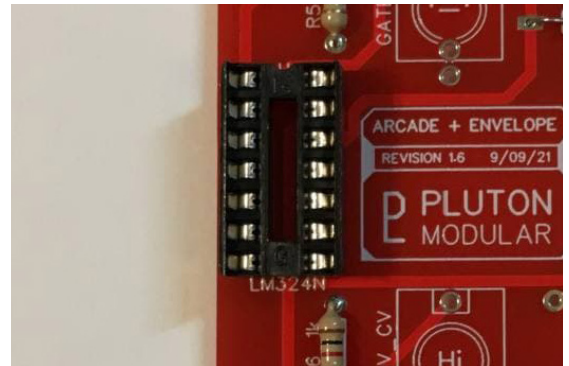
Negative leg on striped side

Watch the orientations!
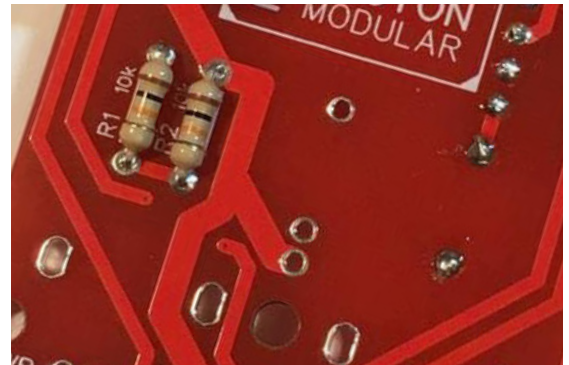
Step Two - IC Socket

Solder the IC socket into the area marked LM324N.

Mind the alignment of the notch!
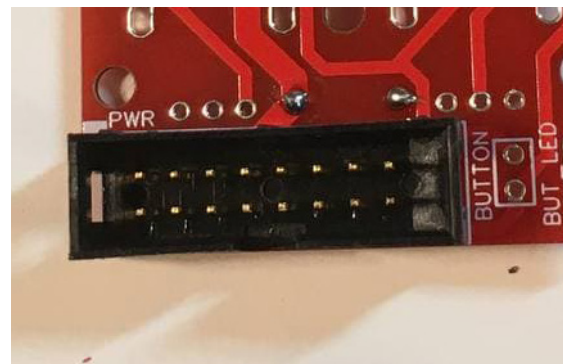
Step Three - Bottom resistors

Solder the 2 remaining resistors on the bottom of the board.

Step Four - Power Connector

Solder the power connector onto the bottom of the board in the marked area.
Be sure to orient it correctly or you could fry your synth!

Step Five - Capacitor

Solder the capacitor into the footprint marked C1.

*Be sure to orient it correctly!
The shorter lead on the capacitor goes in the hole marked "-"*

Note about C2
C2 is an optional space intended to allow advanced users to increase the max envelope length further. It is left empty by default, as the range is already broad enough for most uses.

Step Six - Prep the cable

  Slightly separate and twist the ends of the 4-conductor ribbon cable to prepare it, then pre-solder ONLY ONE side to the PCB.

  Use the marked side of the cable as the positive and negative for the LED to help keep track of which is which.

  Newer kits may have a rainbow cable, making this easier.

Marked Wire

Step Seven - Loose Fit Front-panel components

  Put the knobs and Thonkiconns into the PCB without soldering them.

  The knobs may need to be pushed down with a bit of force to be sure they're inserted vertically! Be sure the 2 large support legs are pressed in all the way.
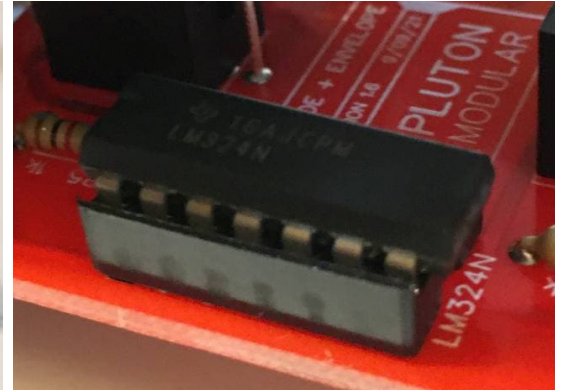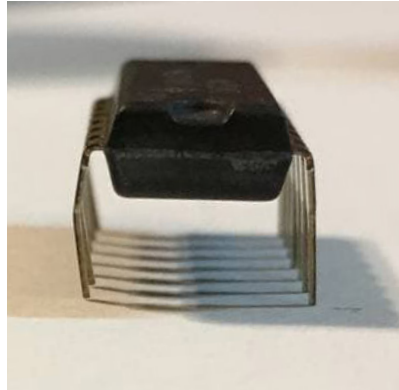
Step Eight - Socket the IC

The IC can now be inserted into the socket.

(While best practice dictates that ICs should be installed last, the panel is in the way at the end, and it would require you to un- and re-install the panel an additional time, risking damage to it.)

You will likely need to straighten the legs against a hard surface to make them parallel.

Step Eight and a half - Sign it!

Use a sharpie or paint pen to put your name and the current date on the blanks on the back of your panel!

(This is an optional step, but I strongly recommend it. It helps people know the history of their module when purchased secondhand)
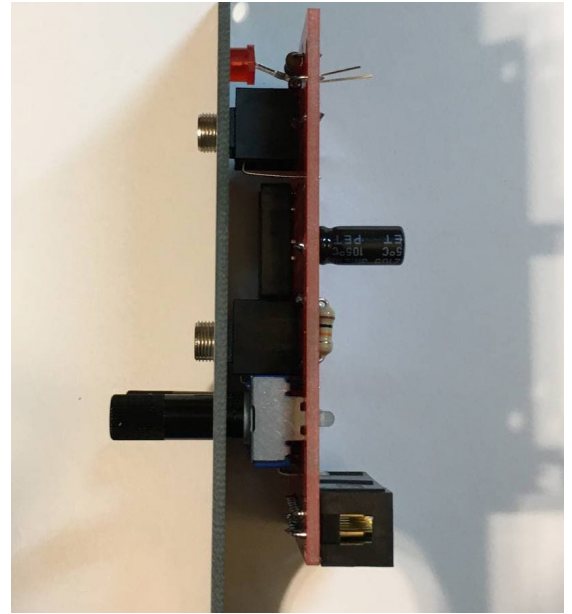
This is probably the last chance you'll have without disassembling the module!

Step Nine - Fit the Panel

Press the panel onto the PCB, bending the LED legs so that they easily fit into the footprint, then tighten the nuts.

The potentiometers should have even clearance around them in the panel holes. Make sure you position them correctly before tightening.

Step Ten - Solder the panel components

After verifying everything is placed correctly, solder the potentiometers, Thonkiconns, and LED in place. Before doing this you should make certain the LED is flush to the panel!

The negative leg of the LED goes toward the resistor. The clarity of this, and the footprint placement will be improved in the next board revision.

Step Eleven - Add the button

Holding the button centered with one hand, screw the nylon nut on firmly from the back.

*It is recommended to leave the protective cover on the button until it's installed in your rack.*
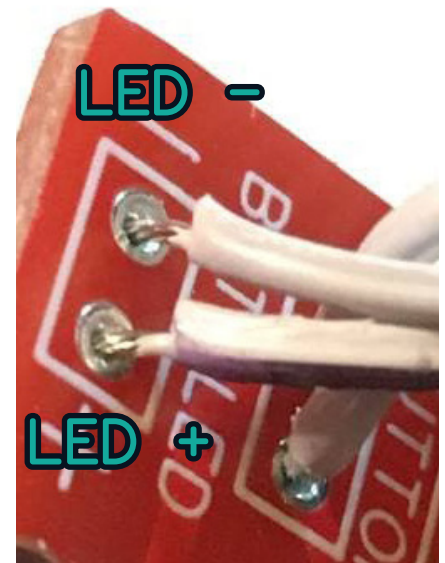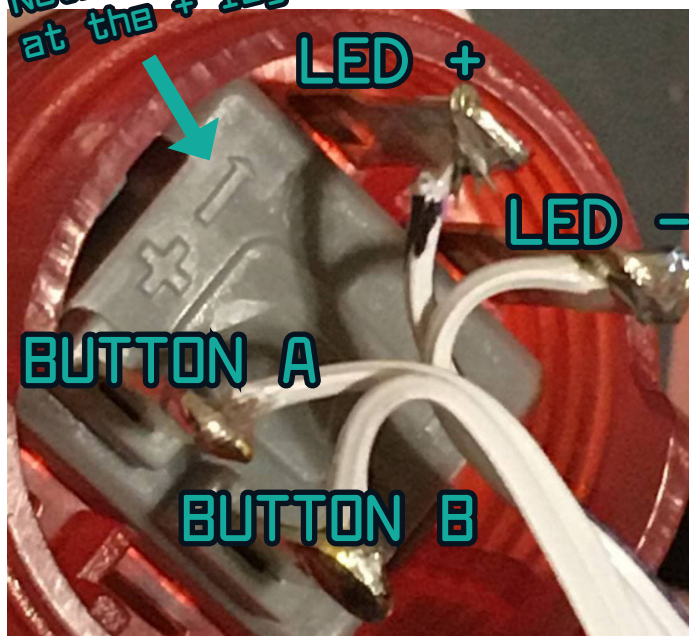
Step Twelve - Connect the button!

Solder the ribbon cable to the PCB and Button, making sure the BUTT_LED + and - go to the + and - marked on the button.

It is important to have the button installed while soldering the wires to it!

LED -

LED +

Note the arrow pointing at the + leg!!

LED +

LED -

BUTTON A

BUTTON B

1 2

3 4

3

4

1

2
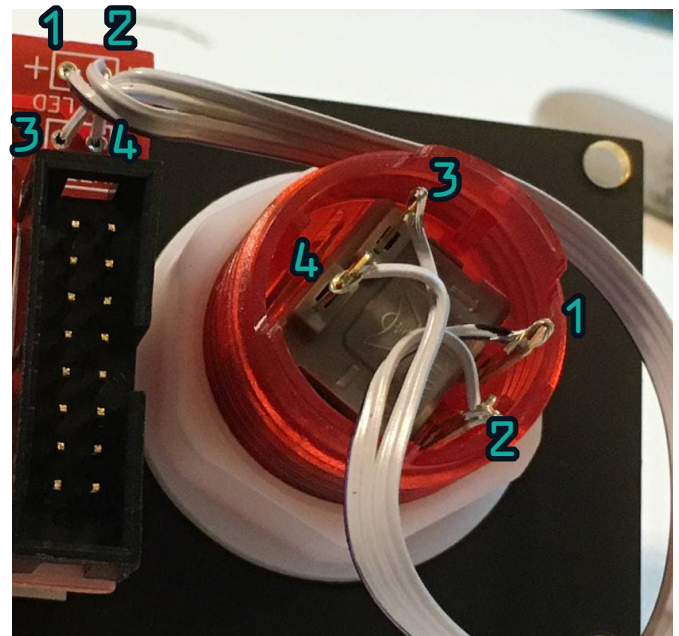
Step Thirteen - CHECK CHECK CHECK

Check for shorts between all the power pins! the only same-column pins shorted together should be the ground pins.

Unfortunately, we cannot take responsibility for anything that goes wrong relating to a DIY module. This includes things like shorting out your system and frying your modules, so PLEASE be very meticulous when it comes to checking the pins here!

Step Fourteen - Final steps

  If all went well, assembly should be complete! Add the knob caps and test the module.

  Make absolutely certain there are no shorts before plugging the module into your rack! If the rack doesn't seem to power on with the module connected, power it off IMMEDIATELY, and check for shorts again.

Need help? Issues? Tips?

Contact us at PlutonModular.com