Parasit Studio

# RC BOX

**Build Document last updated august 2020**
for PCB version 1.0

The ”RC Box” is a passive resistor / capacitor utility-box used for circuit developement and breadboarding.

You can hook up the box to your breadboard (or circuitboard) with alligator clips and quickly toggle between 36 different values of resistors or capacitors.

It can also be set up as either a lowpass or highpass RC filter by connecting one of the inputs to ground.

Happy building!

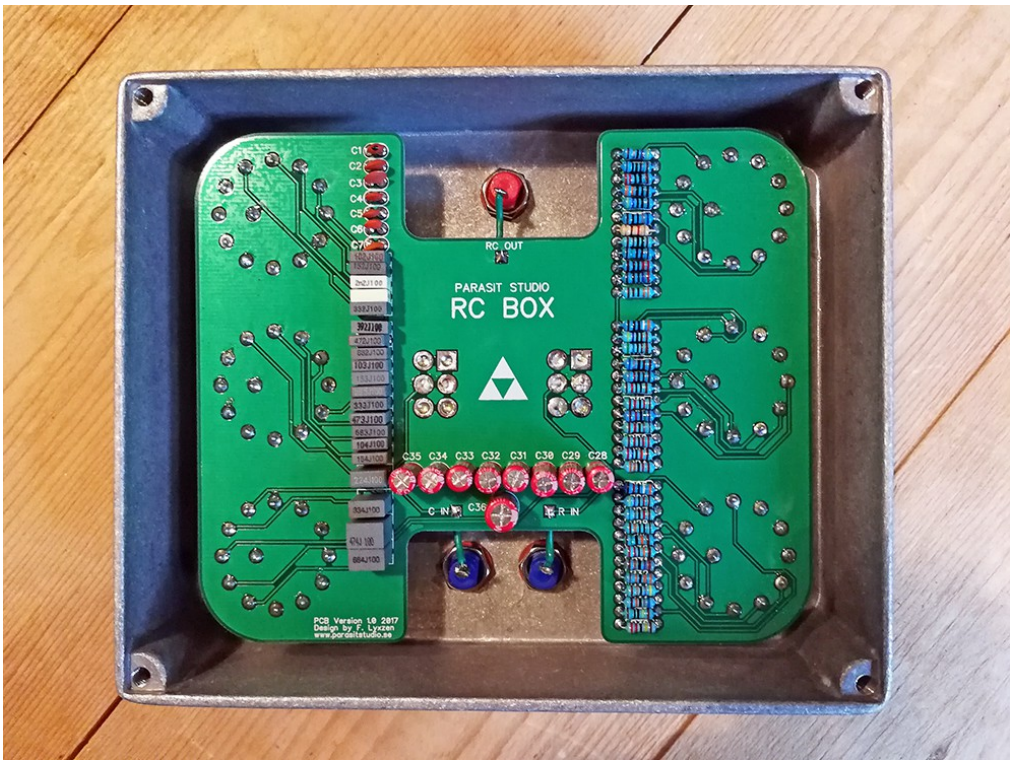

*Parasit Studio personal build*

## Features

- 3x 12 position rotary switches for resistance selection
- 3x 12 postion rotary switches for capacitance selection
- Two toggle switches for each set of rotary switches to select which rotary switch that is in use
- Two inputs and one shared output

## Building tips

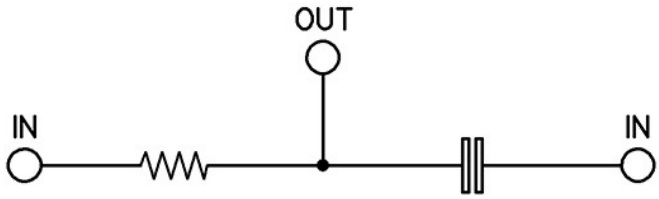
- Take your time and measure the components as you go along.
- Keep in the mind orientation of the electrolytic capacitors.
- Place the switches in the PCB and put it in the enclosure before soldering. The rotary switches are a bit taller than the toggle switches, so keep the toggle switches as far inside the enclosure as possible while still having alittle space on the shaft to have the nut screwed on, and solder the tips of the lugs just inside the switch toggles holes.



Parasit Studio

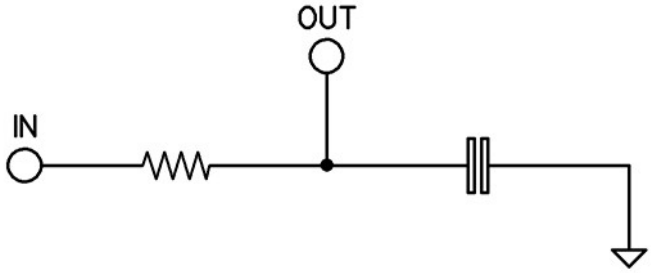
## Signal path

(switching not shown)



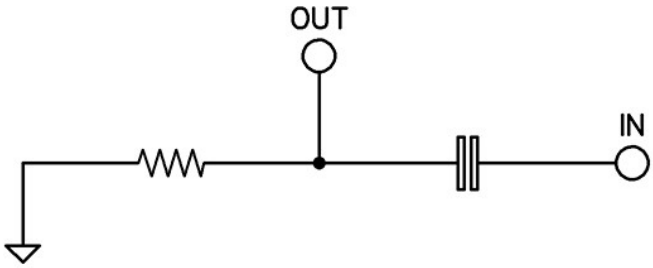

---

**Lowpass filter** - connect the C input to ground




---

**Highpass filter** - connect the R input to ground



# Bill Of Materials (BOM)

- **1x - enclosure**: Hammond BBDD or JJ size
  *146 x 120 x 38 mm (5.70 x 4.70 x 1.50 inch)*

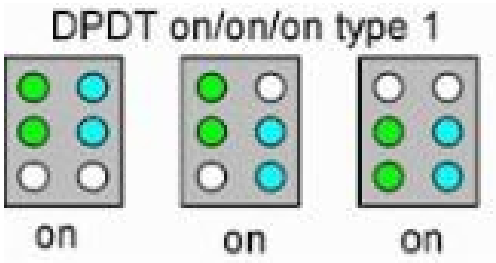
- **6x - rotary switches**: Alpha 1 pole/12 position

  Part numbers
  - SR2612F-0112-21R0B-D8-N (PCB pins)
  - SR2611F-0112-18R0B-D8-N (solder lugs)

*Both the PCB pin and solder lugs versions works ok to mount through the holes on the PCB, but if you buy the solder lug version you need to cut away the tip of the lugs (or else they won't fit through the holes). Keep the pins as long as possible.*

- **2x - toggle switches**: DPDT on/on/on – type 1

  It must be DPDT **on/on/on** switches. on/off/on won't work!




- **3x - jacks**: Binding post / banana jack type

## Probes

You will also need at least two probes with banana plug to alligator clips connectors. These can be bought very cheap from ebay. Just use the search ”banana plug alligator clip probe” and you should find plenty of different options.

*The BOM continues on the next page*

Parasit Studio

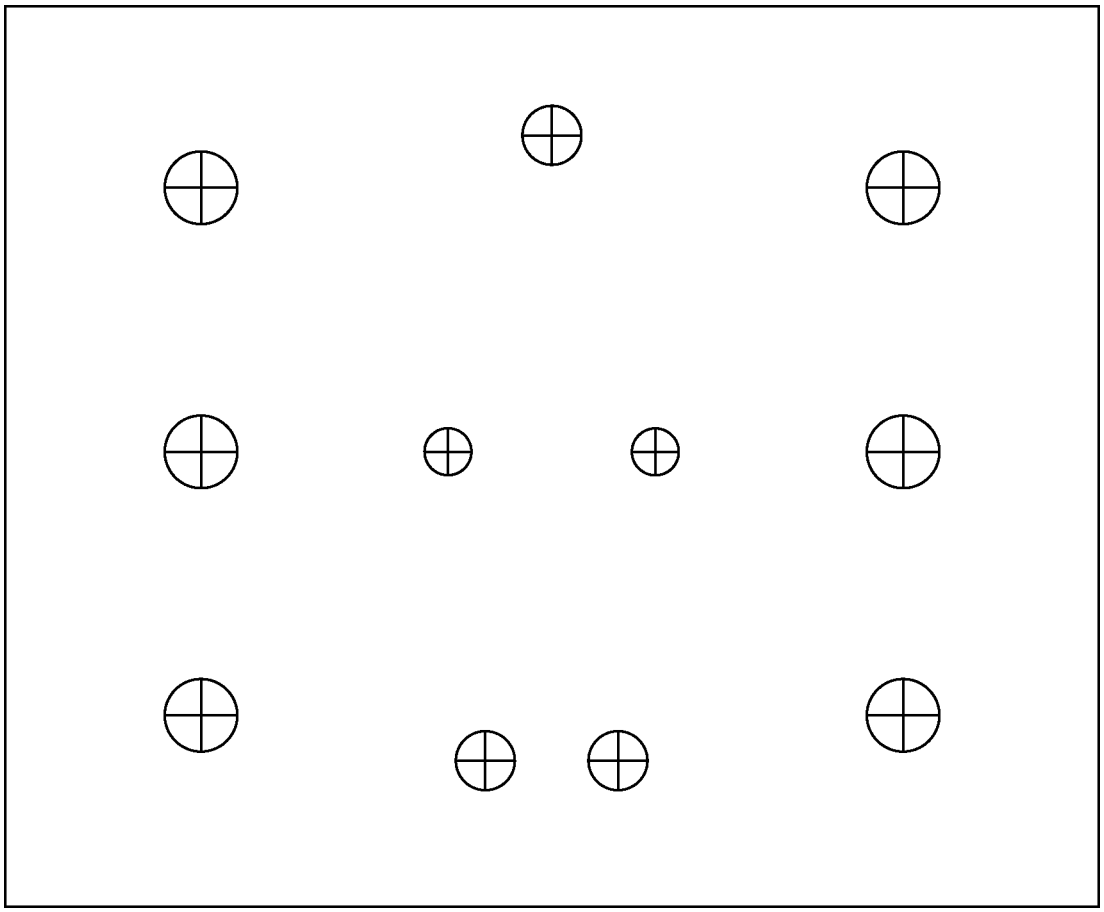
# BOM - Resistors and Capacitors

| Resistors | | Capacitors | |
|---|---|---|---|
| R1 | 47R | C1 | 10pF |
| R2 | 100R | C2 | 47pF |
| R3 | 220R | C3 | 100pF |
| R4 | 330R | C4 | 220pF |
| R5 | 470R | C5 | 330pF |
| R6 | 680R | C6 | 470pF |
| R7 | 820R | C7 | 680pF |
| R8 | 1K | C8 | 1nF |
| R9 | 1.5K | C9 | 1.5nF |
| R10 | 2.2K | C10 | 2.2nF |
| R11 | 2.7K | C11 | 2.7nF |
| R12 | 3.3K | C12 | 3.3nF |
| R13 | 3.9K | C13 | 3.9nF |
| R14 | 4.7K | C14 | 4.7nF |
| R15 | 5.6K | C15 | 6.8nF |
| R16 | 6.8K | C16 | 10nF |
| R17 | 8.2K | C17 | 15nF |
| R18 | 10K | C18 | 22nF |
| R19 | 12K | C19 | 33nF |
| R20 | 15K | C20 | 47nF |
| R21 | 18K | C21 | 68nF |
| R22 | 22K | C22 | 100nF |
| R23 | 27K | C23 | 150nF |
| R24 | 33K | C24 | 220nF |
| R25 | 39K | C25 | 330nF |
| R26 | 47K | C26 | 470nF |
| R27 | 68K | C27 | 680nF |
| R28 | 100K | C28 | 1uF |
| R29 | 150K | C29 | 2.2uF |
| R30 | 220K | C30 | 3.3uF |
| R31 | 270K | C31 | 4.7uF |
| R32 | 330K | C32 | 10uF |
| R33 | 470K | C33 | 22uF |
| R34 | 680K | C34 | 33uF |
| R35 | 1M | C35 | 47uF |
| R36 | 2.2M | C36 | 100uF |

*These are just my preffered values. Use values that suits your needs.*

Parasit Studio

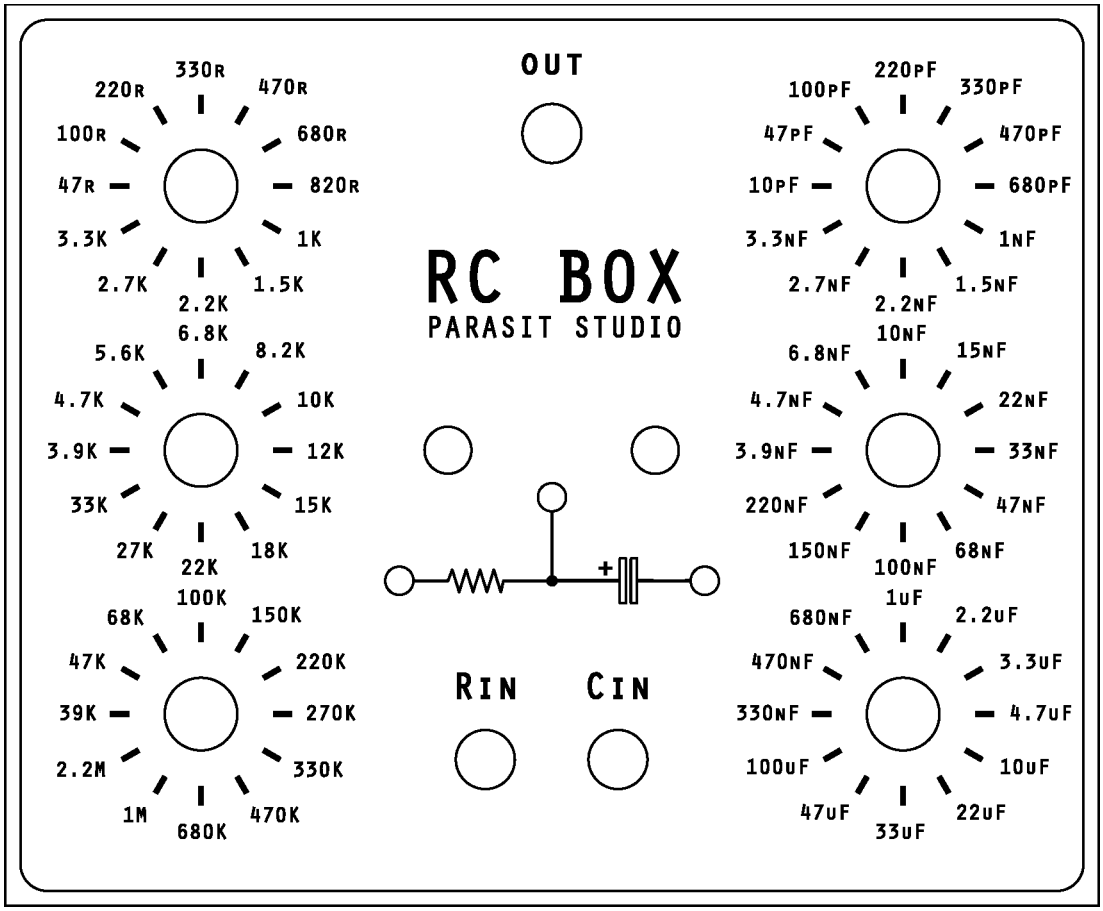
# Drilling template (Hammond BBDD/JJ)



- Use at your own risk! This template is approximate.
- Make sure your printer isn't doing any scaling / is set to 100% print size.
- **Measure and confirm before drilling!**
- Read the build tips section highlighted in red before soldering pots and switches to the PCB.

Parasit Studio

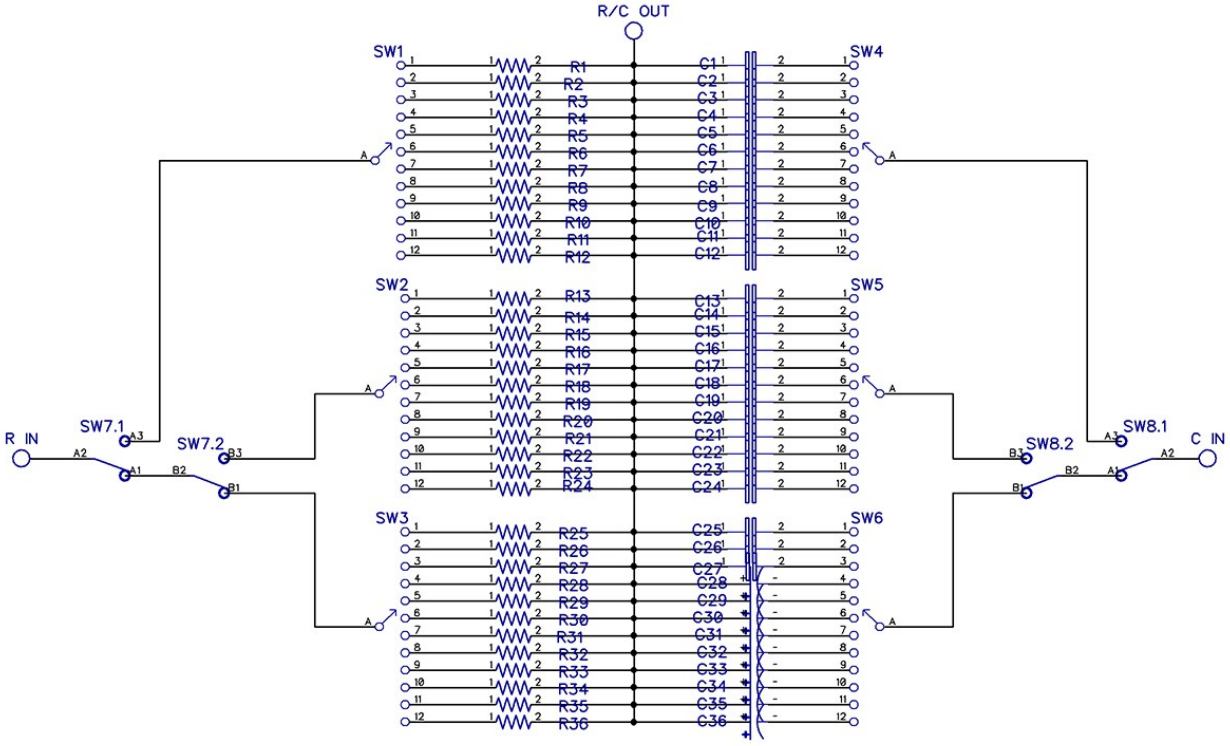
# Faceplate




Here you have the graphic design for the faceplate that is used on the fully assembled Parasit Studio builds, in case you want to make your own print with etching, waterslide decals ect.

Parasit Studio

# Schematic




## Terms of use

PCB's from Parasit Studio are intended for DIY use only. Commersial resale is not allowed. It's meant for personal use, which means that it's not allowed to build several of these and sell them for profit to strangers using public forums and craiglist ads. However, it's totally ok to build one for yourself and maybe a couple of more to your friends. After all, that's what this hobby is about.

**www.parasitstudio.se**
**parasitstudio@gmail.com**