

Hexa-VCA/Mixer V3..2

This module contains six VCA in a row, 5 of them with linear/logarithmic response and the sixth can be a master VCA of the five or work alone with linear CV response. The gain of any stage is 1 with a CV input of 10V in linear mode and until 1,2 at 12V of CV input; in the logarithmic behavior the unity gain is reached at 7V of CV and it raises until 1.2 at 10V. The potentiometers add to the resultant CV inside from -12 to 12 volts to get the steady response of any unit.

Assembly procedure:

In order to find the components on the PCB we name them in the same way as we write, the number one is in the top left and they progress to the right and down, taking as reference the power connector down-right.

List of materials in the control PCB:

Resistors:

Qty.	Value	Name	Code
6	1k 5%	R16, R21, R56, R60, R99, R108	Brown, black, red, gold
5	27k 5%	R5, R20, R47, R72, R85	Red, purple, orange, gold

From the 'bottom' solder the **female** connectors: PANEL_A_B_C, PANEL_D_E_M.

With the pliers twist the positioning leg on the top of each potentiometers, because we don't need them and they can broke the potentiometer against the front plate. Put the switches in the positions: LIN/EXP_A, LIN/EXP_B, LIN/EXP_C, LIN/EXP_D, LIN/EXP_E, MASTER_SW, the potentiometers in the positions (this will need a bit more effort than the expected, but they go all way down) INIT_A, INIT_B, INIT_C, INIT_D, INIT_E, INIT_MASTER and the banana or minijack on the positions: A_CV1, A_CV2, A_IN, A_OUT, B_CV1, B_CV2, B_IN, B_OUT, C_CV1, C_CV2, C_IN, C_OUT, D_CV1, D_CV2, D_IN, D_OUT, E_CV1, E_CV2, E_IN, E_OUT, MASTER_IN, M_CV1, M_CV2, M_OUT. Put the front panel, screw all the nuts and solder everything after, this is the way to match the different height of the components against the front plate.

The output of each VCA is normalized in the sum bus to be controlled with the sixth VCA, if you are using banana connectors or want to avoid this situation add some solder in the provided pads: SJ1, SJ2, SJ3, SJ4, SJ5 on the bottom of each minijack.

Power ribbon cable:

Crimp the two plastic connectors to the ribbon wire ensuring in both extremes the blue wire correspond to the pin number one of the connectors. The pin number one is indicated with a small triangle. To do that use a ribbon cable crimping tool, or if is not available a bench vice. Do not try to close the connectors with a pliers because it will brake up

If you are not sure with the process watch this video:

<https://www.youtube.com/watch?v=plyZKT3Yock>

List of materials on the Main PCB:

Capacitors:

Qty.	Value	Name	Code
18	0.1uF	C1, C2, C3, C6, C7, C8, C9, C10, C11, C14, C15, C16, C17, C18, C19, C20, C23, C26	104
6	47pF	C4, C5, C12, C13, C21, C22	47
2	10uF	C24, C25	10uF

Resistors:

Qty.	Value	Name	Code
5	330Ω 1%	R9, R15, R42, R52, R69	Orange, orange, black, black , brown
5	560Ω 1%	R8, R24, R38, R67, R68	Green, blue, black, brown, brown
12	680Ω1%	R17, R18, R19, R30, R54, R57, R66, R70, R94, R98, R103, R109	Blue, gray, black, brown, brown
5	3.3k 1%	R2, R12, R27, R43, R82	Orange, orange, black, brown, brown
5	4.7k 1%	R6, R11, R49, R75, R40	Yellow, purple, black, brown, brown
9	10k 1%	R14, R37, R73, R80, R87, R93, R112, R113, R114	Brown, black, black, red, brown
6	15k 1%	R10, R13, R45, R50, R84, R90	Brown, green, black, red, brown
5	20k 1%	R31, R34, R59, R74, R110	Red, black, black, red, brown
1	22k 1%	R83	Red, red, black, red, brown
1	43k 5%	R92	Yellow, orange, orange, gold
11	47k 5%	R25, R26, R64, R65, R100, R101, R102, R105, R106, R107, R111	Yellow, purple, orange, gold
25	100k 1%	R7, R22, R23, R28, R29, R32, R33, R36, R46, R48, R51, R53, R55, R58, R62, R63, R76, R77, R78, R79, R91, R95, R96, R97, R104	Brown, black, black, orange, brown
2	300k 1%	R88, R89	Orange, black, black, orange, brown
1	470k 5%	R86	Yellow, Purple, Black, Orange, Brown
5	820k 1%	R1, R4, R41, R44, R81	Gray, red, black, orange, brown
5	1M 5%	R3, R35, R39, R61, R71	Brown, black, green, gold

Solder the diodes 1N4148 in the positions D1, D2, D3, D4, D5 taking care of the polarity, the side with the strip is the cathode and must match the shape on the PCB.

Solder the sockets according with his sizes (8 pin or 16 pin), the strip of 30 pins on the TO_PANEL_A_B_C and TO_PANEL_D_E_M, and the ferrites FERRITE+, FERRITE- using a leg of resistor for it.

The transistors T1, T2, T3, T4, T5, T6, T7, T8, T9, T10, T11 are 2N3906, solder it taking care of the side, it must match the drawing on the PCB.

Gently insert the TL072 on the positions IC1, IC3, IC4, IC5, IC7, IC8, IC10 and the LM13700 on the positions IC2, IC6, IC9.

From the 'bottom' of the PCB solder the EPOWER1 connector.