Majella

MCVC

DIY MANUAL

Version 1.0

INTRODUCTION

THE MCVC (MIDI to CV Converter)

The MCVC is a four-channel MIDI (Musical Instrument Digital Interface) to Control Voltage (CV) converter. The MCVC is a straightforward interface between the Eurorack synthesizer system and devices that communicate using the MIDI - protocol. The MIDI CV Converter bridges the gap between MIDI and Eurorack systems, by converting MIDI messages to control voltages, corresponding to eurorack signal standards.

CONTENTS

The MCVC comes in a box and is fully assembled and tested. Included are a 16-pin IDC power cable and M3 mounting screws + rack crash protection washers.

SUPPORT

If you have any further questions or queries please contact:

support@majella-audio.com

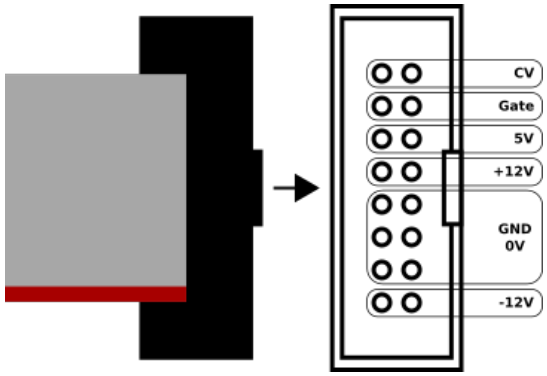
SPECIFICATIONS

Below are the specifications of the MCVC.

- Dimensions 128,5 x 70,8 (14 HP) x 15mm
- Doepfer A-100 compatible
- 16pin Power (Using 5V rail!)
- Current usage: +12V 39mA, -12V .25mA, 5V 30mA.

POWER CONNECTION

This Module is designed to be connected to a Eurorack system power supply using a 16 pin ribbon cable. The -12V (red lead) should be directed as shown in the picture below.



WARNING!

The MCVC is designed for Eurorack systems. The supply should be +-12V and connected signals should not be outside of the +-12V range! Do not reverse polarity when connecting the power, this will damage your module permanently!

Please treat your Majella Audio products with care. Majella Audio does not offer warranty for any damages to the MCVC due to accidental damages (fluid spills, scratches, wrong input/output connections etc.)

Requirements

The kit contains the PCB with all SMD parts pre-soldered, panel and all electrical components to finish the module. You will need (as a bare minimum): basic soldering tools and a Digital multimeter to finish this module.

Required tools:

- Soldering iron/station
- Soldering tin
- Wire cutter
- Multimeter (minimal 3 decimals)
- Trim screwdriver (flat)
- 2 mm Allen key (hex key)
- Nut driver (plier, at own risk)

Bill of materials (BOM)

To start, it is good practice to check if the kit is complete. We double check the kitbags, but its never a bad idea to triple check.

IC socket (1x 8 pin)

Its best to start with the lowest parts on the top side of the MCVC printed circuit board (PCB). The yellow marking in figure 1 shows its placement.

Please note the orientation of the IC (socket). The notch in shows where Pin 1 of the socket is placed and should be pointed upwards as shown in figure 1.

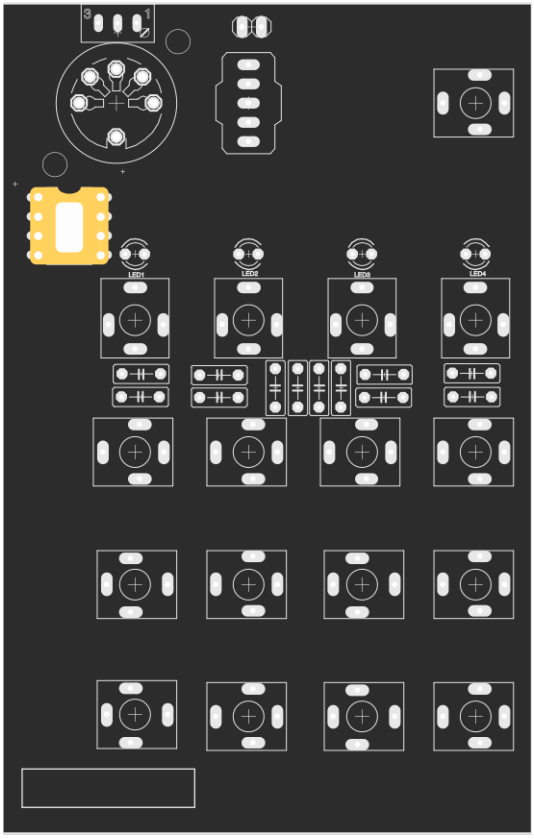


Figure 1: IC Socket placement (YELLOW)

Capacitors (12x)

There are 12 capacitors (100nF) that need to be soldered. The placement is shown in figure 2 (yellow markings).

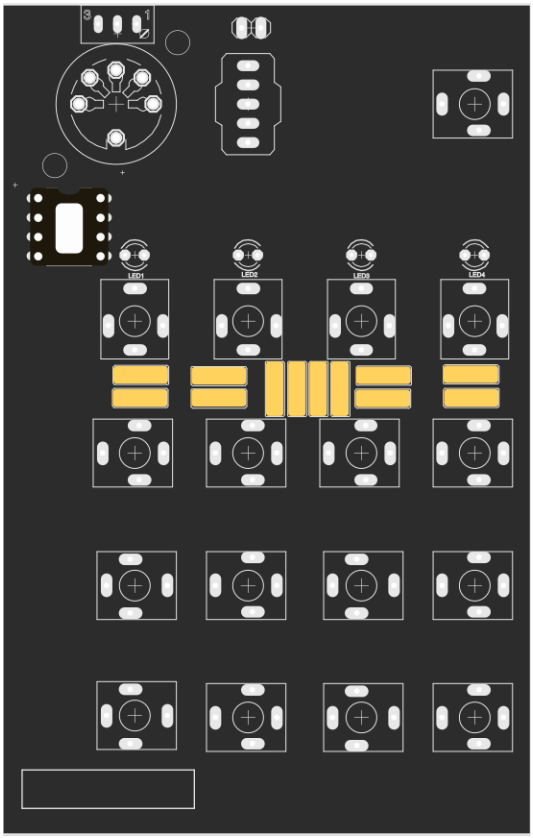


Figure 2: 100nF capacitors placement (YELLOW)

Trimmer (1x)

Now we solder the trimmer. See figure 3 for its placement (yellow marking). Mind its orientation! The small trim screw should be pointing towards the left as shown in figure 3 (yellow marking).

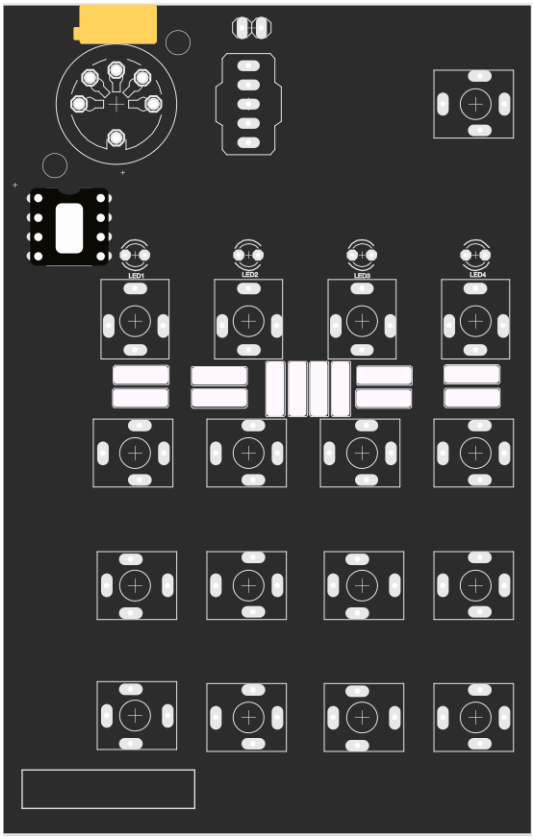


Figure 3: Trimmer (YELLOW)

Minijacks (17x) Take care on this one!

We advice to (without soldering) place the jacks into the PCB (yellow marked, figure 4). Then place the panel on the jacks. Carefully turn around the MCVC and lay it down on supports, as shown below in figure 5:

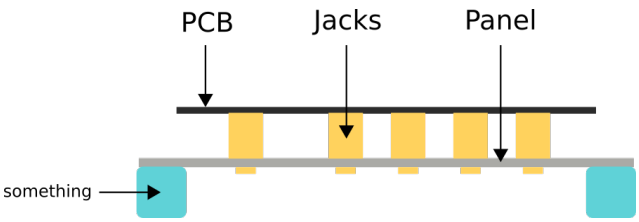


Figure 5: support

Solder one pin from each connector. Make sure to press the panel so that each minijack connector is tight pressed to the PCB when soldering the pin. Check if all minijacks fit tight between the panel and PCB. Then solder the rest of the pins.

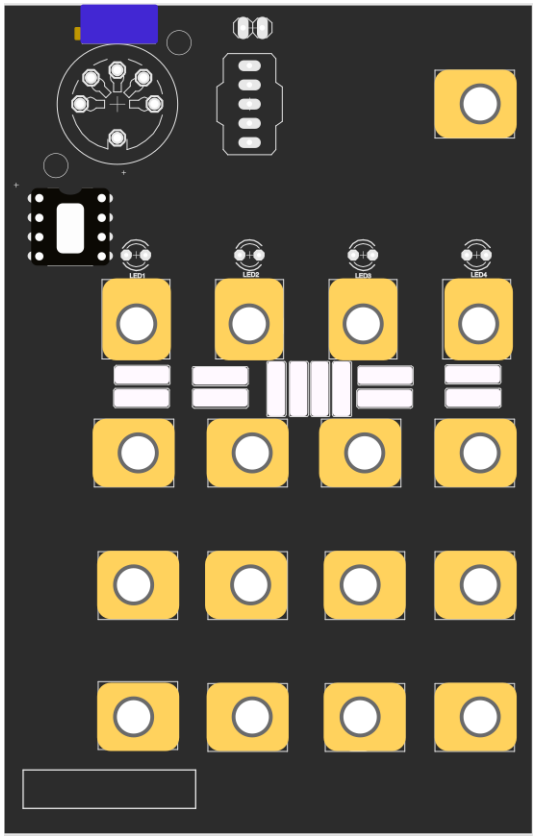


Figure 4: 3.5 mm minijacks (YELLOW)

Switch (1x)

Next up is the switch. It should be placed as marked yellow in figure 6. Make sure it's tight to the PCB. When soldered, toggle the switch downwards, this will make it easier to fit the panel on top later on.

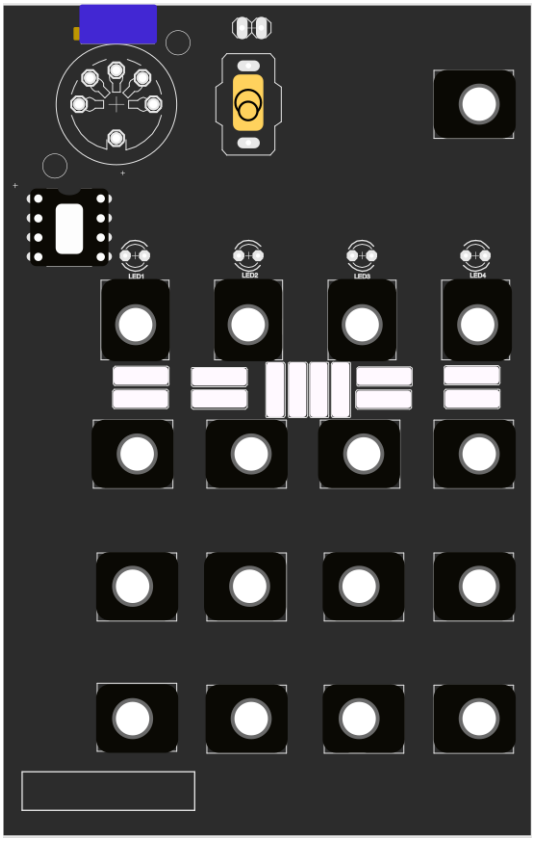


Figure 6: Toggle switch (YELLOW)

Headers (1x 16pin, 1x 6pin)

The 16pin header and the 6pin header should be placed on the bottom side of the PCB (the back of the module). This is show in figure 7 (yellow marking). MIND its orientation! The Notch is shown in figure 7.

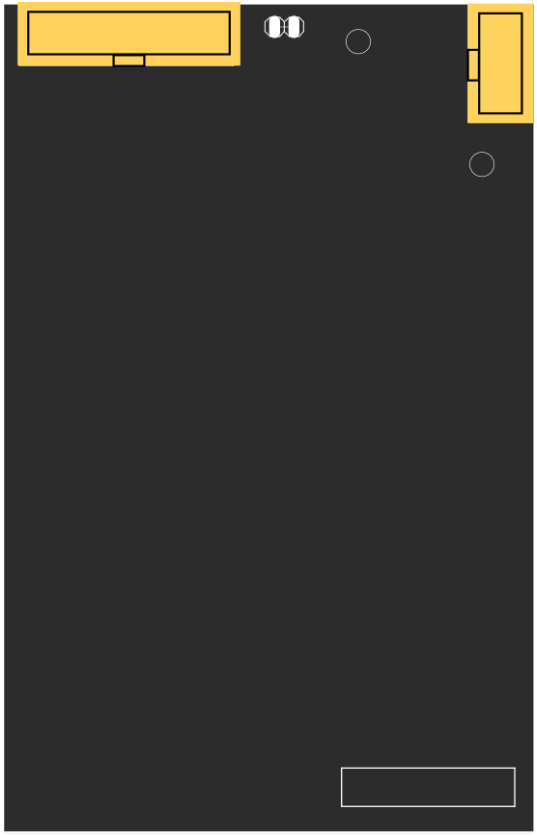


Figure 7: Headers (YELLOW)

LEDs (4x)

There are 4 LED's that need to be placed. The orientation of each LED is very important!

The anode (+ positive, long leg) is placed to the left for LED 1 – 3, and placed to the right for LED 4. This is shown in figure 9. The anode (+ positive, long leg) is marked with a red dot in figure 9.

Figure 9: LED orientation (YELLOW)

It helps to use the panel while placing the LED's so that they fit the panel nicely.

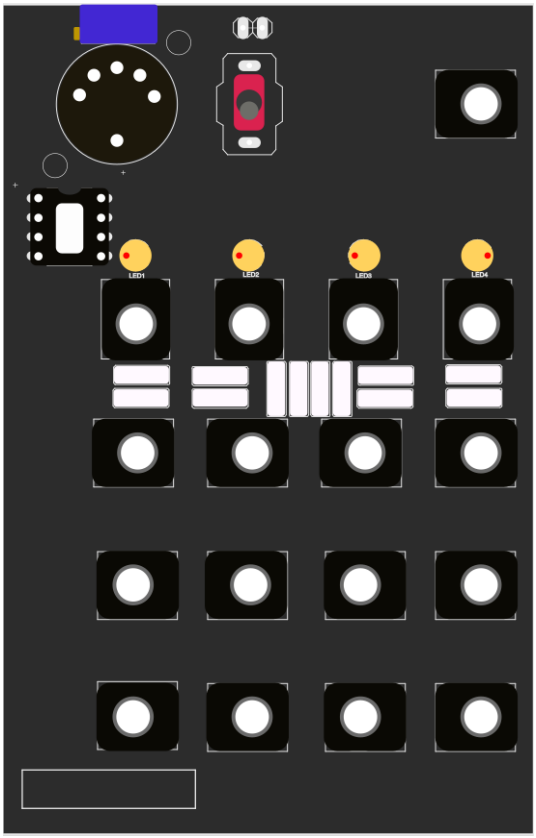


Figure 8: LED's (YELLOW)

MIDI connector (1x)

Now we are going to solder the MIDI connector as shown in figure 10. Make sure its straight.

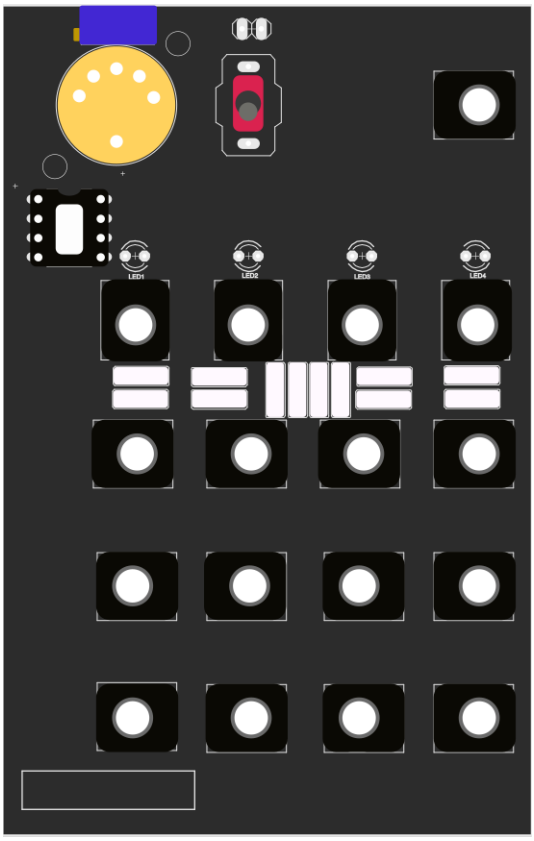


Figure 10: MIDI (DIN) connector (YELLOW)

Trimming

Step 1: Use a multimeter and a small flat screwdriver. Measure at the measurement point as shown in figure 11. Trim the potentiometer until a voltage of about 10.6V is set.

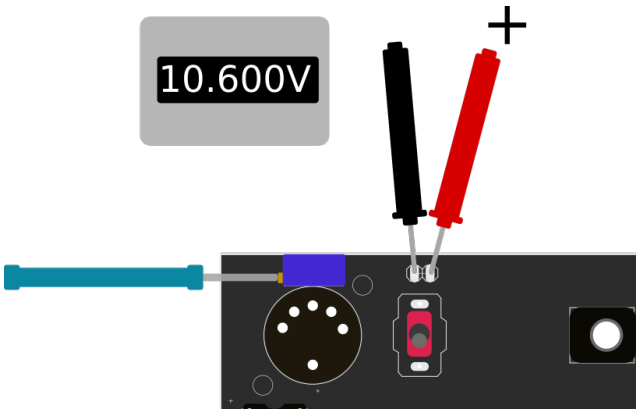


Figure 11: 10.6V start point

Step 2: Connect a Midi keyboard and play A notes. Measure the output pitch voltage on channel 1 (See figure 12).

Play note A in different octaves until you have a note A, which is close to 4V.

Trim it to exactly 4.000V (or as close as you can get).

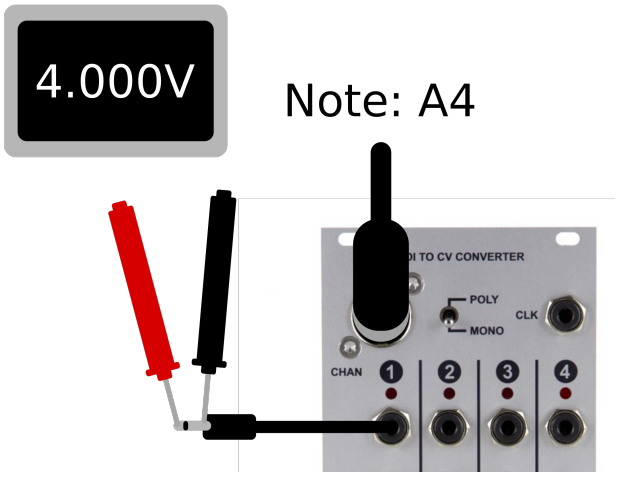


Figure 12: A4 should be 4V. (Octave can differ)

Montage

Now that everything is soldered and the device is tuned, we can montage the panel.

It is however possible to tune the MCVC while the panel has been placed.

Place the two spacers/standoffs (yellow marking on figure 13) and screw the black 3mm screws from the back (PCB). Place the panel and screw all hex nuts + the 2 silver 3mm screws as show in figure 14.

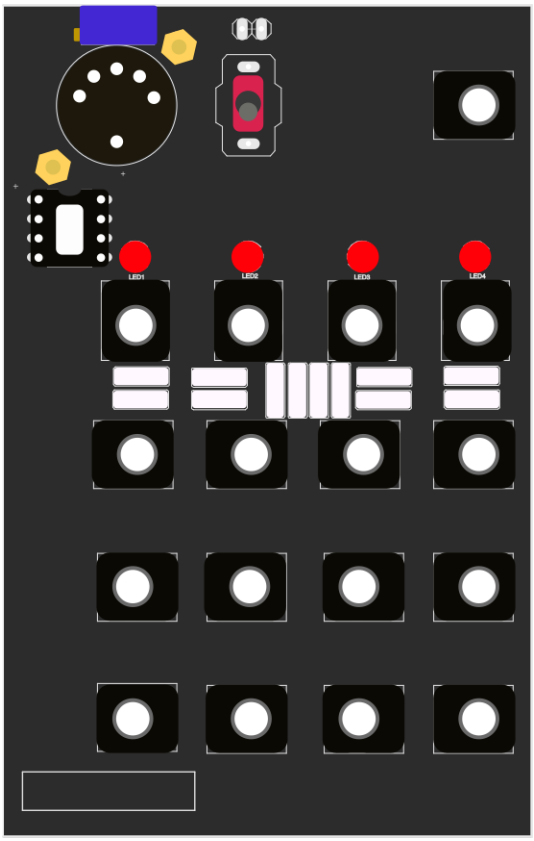


Figure 13: standoffs (Yellow)

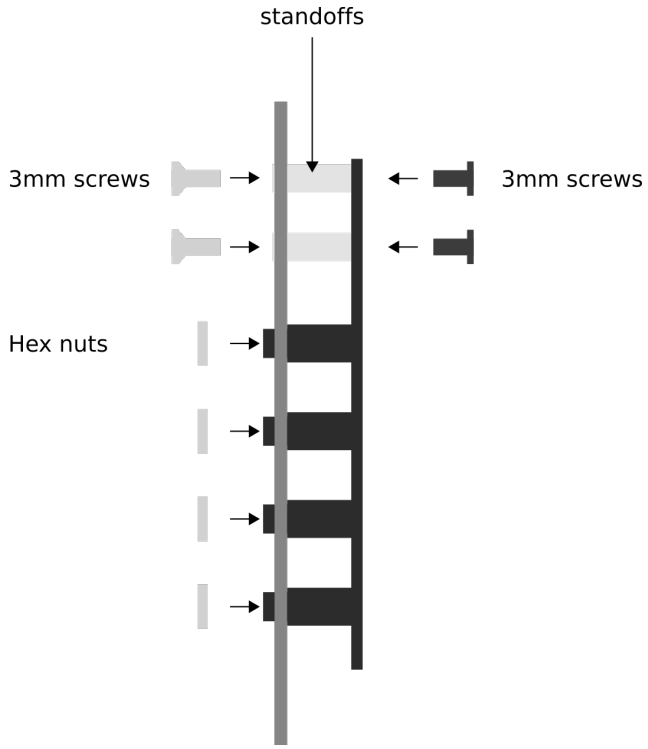


Figure 14: final montage

Bill of materials (BOM)

Quantity	Value	Device
12	100nF	Capacitors
1	6n137	Optocoupler
1	8 pin	IC socket
4	RED	LED's
1	DIN	MIDI connector
1	Toggle	Switch
1	6 pin	IDC header
1	16 pin	IDC header
17	Minijacks	Minijack connectors
1	10k	Trimmer
2	Standoff (hex)	montage
2	3mm Screws (Black, hex)	montage
2	3mm Screws (silver, hex)	montage

Special thanks to:

Rob Cottam

MCVC User Manual
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Designed and made in the Netherlands