

Acoustic Diffuser Panels with (or without) LED-lighting



LutraVulgaris

[VIEW IN BROWSER](#)

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Summary

different sizes to fit all your needs

[Art & Design](#) > [Wall-mounted](#)

Tags: [wall](#) [sound](#) [panel](#) [ws2812b](#) [audio](#) [diffuser](#)
[dampener](#) [dampening](#) [diffusor](#) [acoustic](#) [diffusing](#)

Modulair Diffusion panels with LED lighting!

Still in the process of figuring out product design, testing and documenting everything this will be a very early concept. currently I'm in version 8 or 9 (can't even remeber/ keep track) but there were a lot of prototypes before this. made many little misstakes and therefor I can't promise there are some flaws left. either way it is good enough to publish. I got one build already and making some bigger ones now to make sure every part fit into eachother.

you **CAN** use it **WITHOUT** the LED-strips and just print the diffuser parts. they still connect with countersunk screws to eachother and you can use the existing holes on the front to mount it to the wall directly. cover it with a screwcover located in the files section and done.

starting with 40x40cm this is the smallest diffuser you can configure. You only need 4 cornerpieces 200x200 and a centerpiece to lock it all in place. Now you can make it as big as you want in steps from 10cm. for example you can make a 50x40 panel or a 70x50 or a 100x60. just use the end- or midpieces available.

the whole thing uses **m3 5x5 heat inserts**

it screw together using various **m3 10/18/20/22mm screws**

the cornerstones I used some **m3 5mm countersunk hex screws**

the **LEDSTRIP** is a 12mm WS2812b and fits into the slot of the profile, no need to waste the gluestrip.

I controll everything with a **ESP32 board** with **WLED** installed

- First put in every heatinsert
- connect all the top and bottom ledprofile, screw them together with m3x10
- connect all the sides using m3x18
- with a now complete frame you can add the LEDstrip
- connect all the diffuser with the centerpiece and countersunk m3x5mm screws
- put the frame on the bottom of the assembled diffuser and connect using m3x20
- on the front screw in the m3x22 screws in the corner
- this is the moment you want to add the LEDdiffuserstrips, when it is hanging on the wall you will curse the job. the slide in the slots from the side. cut the last one to the right size befor adding it. you can use printed strips but you can also use a piece of paper cut to 16,5mm.
- if everything is assembled you can screw it on the wall from the front and cover the holes with the screw covers located in the files section.

I've designed everything to put all the cabling through the wall. I guess not everybody can do this and will be forced to have the cable in sight. I will make another part to house an external cable.

I added some pre assembled folders with everything you need to print the corresponding size. As in the description you can make it any size you want, go in 10cm increments or 20cm everything should fit together. play around with the different heights of the diffuser blocks. it is designed so it wont have a connecting block with the same height.

print settings:

- 2 walls
- 2 bottomlayers

- 4 toplayers
- 0.2mm layerheight
- 10% infill
- PLA 220/55

with these settings it will cost you about:

Diffuser parts:

- 200x200 = 200 grams
- 100x200 = 100 grams
- 100x100 = 50 gram

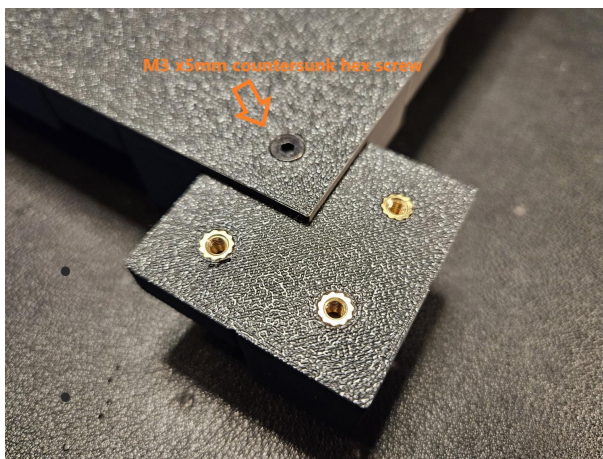
LEDprofile parts top and bottom:

- 200x200 corner = 70 grams
- 200x200 straight 42 grams
- 100x100 straight = 22 grams

so for a 40x40 grid you will use about 1100 grams of filament

things to do:

1. make external cable passthrough
2. design the whole thing to house one kind of screw and fewer sizes
3. make a 40mm version
4. make a 40mm and 20mm MIXED diffuser block version
5. make it easier to mount without LEDlighting



Centerpiece to lock in various extensions together using **m3 5mm countersunk hex screws**

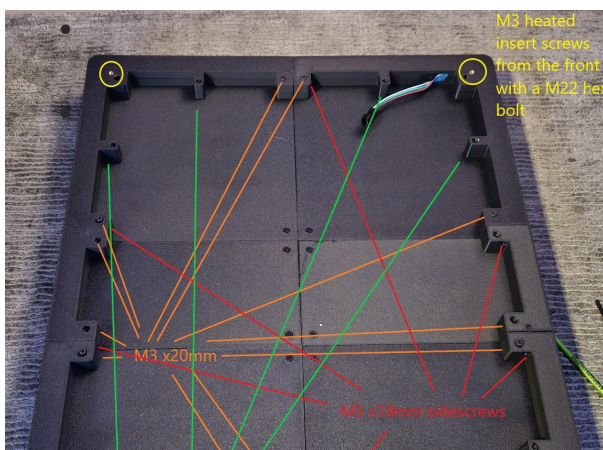
This looks hectic but is not that complicated.

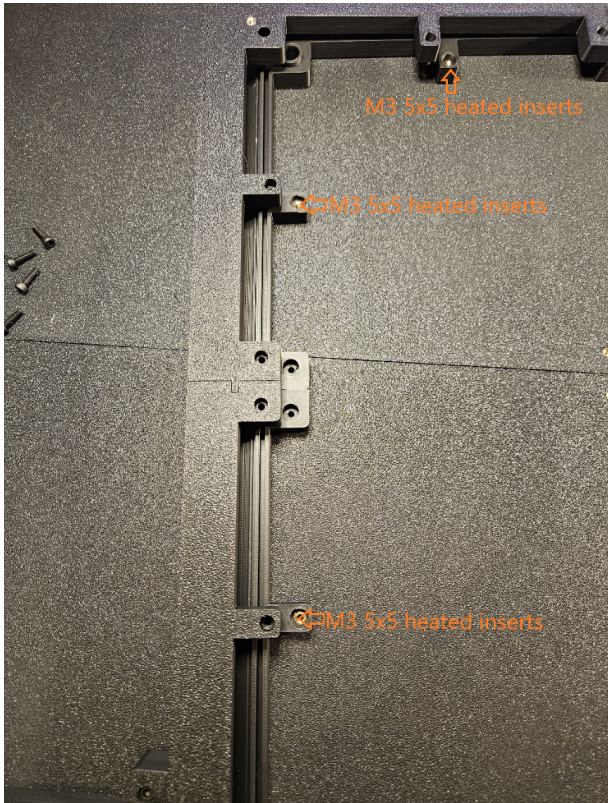
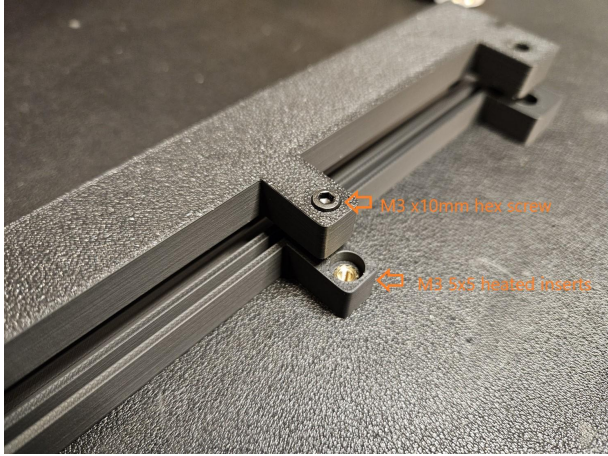
there are sidescrews (m13x18), to connect the various frame pieces together. (red)

the m3x10mm screw the top and bottom framepieces together (green)

the m3x20 screw the whole frame to the diffuser (orange)

on the front you can screw in some m3x22 screw to secure the corners (marked in yellow)





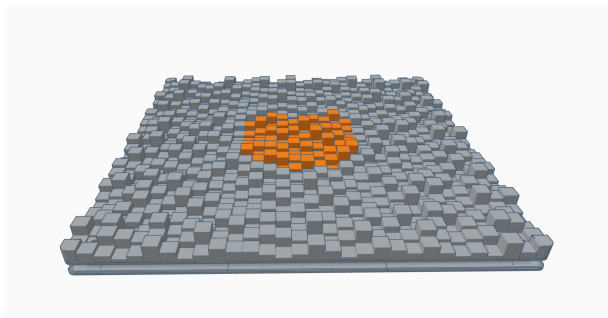
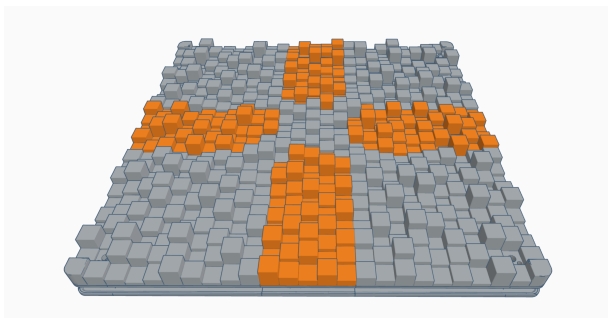
these small m10 screws are only there to hold the bottom and top of the frame together, as well as giving some structural support.

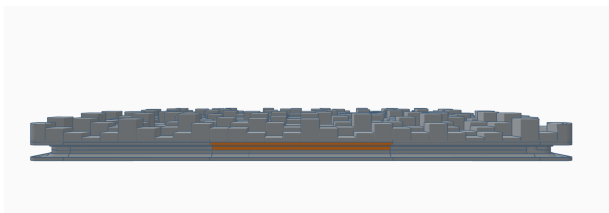
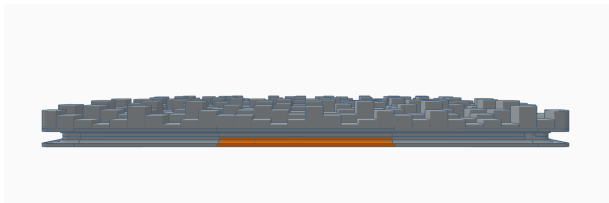
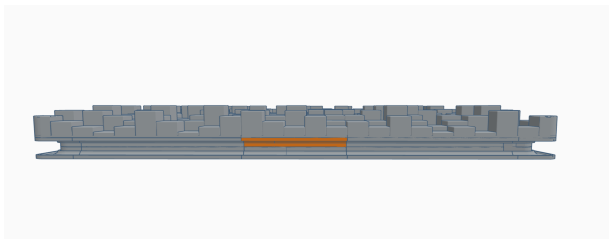
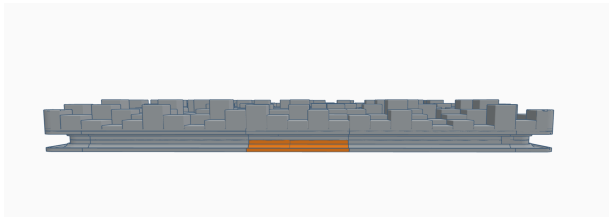
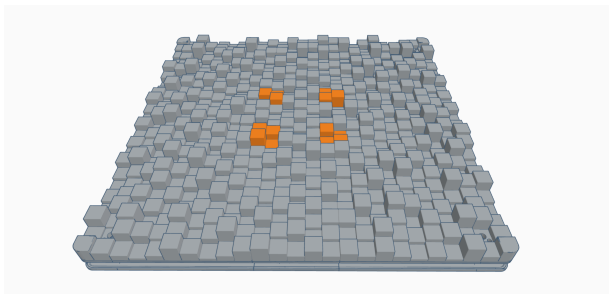
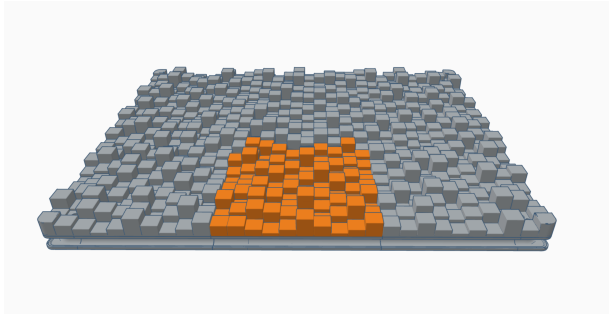
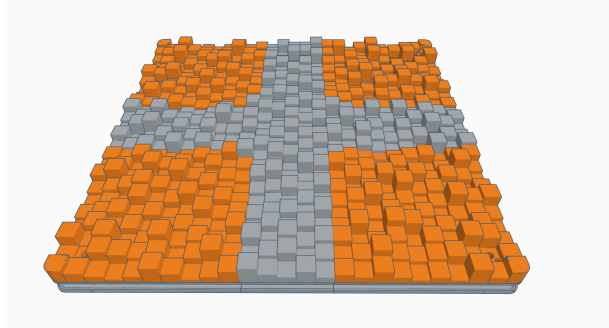
to make a frame you just need to connect all the m3x10 screws and m3x18 sidescrews to their corresponding others to make a frame. later you will screw this frame to the diffuser

100x200mm endpiece

200x200 midpiece

200x200 cornerpiece





200x200 endpiece

centerpiece

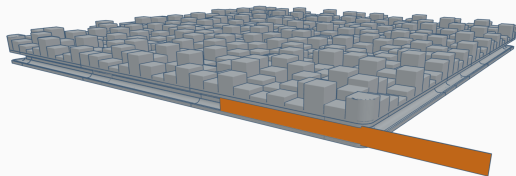
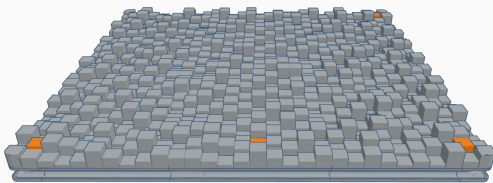
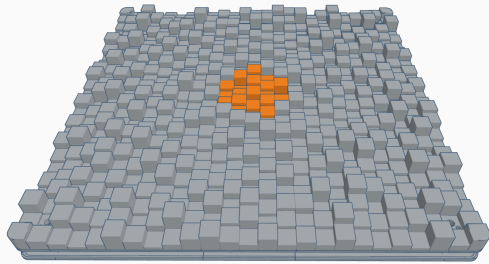
100mm straight bottom

100mm straight top

200mm straight bottom

200mm straight top

200mm corner bottom



200mm corner top

100x100 midpiece

screw cover

light diffuserstrip

credits: although I made the model myself I got a lot of inspiration from a [model](#) from [@Hawk7_218067](#)

Model files



diffuser 40x40

6 files



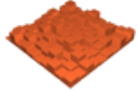
diffuser-led-profile-200x200mm-corner-top.stl

☐ print 4 of these



diffuser-led-profile-200x200mm-corner-bottom.stl

☐ print 4 of these



diffuser-200x200mm-cornerpiece.stl

☐ print 4 of these



diffuser-strip-250x165x034.stl

☐ print 6 of these at 0.12mm layer height and first layer 0.1mm



diffuser-cornerstone-random-1.stl



diffuser-screw-cover-20mm.stl

☐ print 4 of these



diffuser 50x50

9 files



diffuser-200x200mm-cornerpiece.stl

☐ print 4 of these



diffuser-led-profile-200x200mm-corner-top.stl

☐ print 4 of these



diffuser-led-profile-200x200mm-corner-bottom.stl

☐ print 4 of these



diffuser-100x200mm-endpiece.stl

☐ print 4 of these



diffuser-midpiece-100x100mm.stl

☐ print 1 of this



diffuser-cornerstone-random-1.stl

☐ print 1 of this



diffuser-centerpiece-random-2.stl

☐ print 1 of this



diffuser-strip-300x165x034.stl

☐ print 7 of these at 0.12mm layer height and first layer 0.1mm



diffuser-screw-cover-20mm.stl

☐ print 4 of these



diffuser 60x60

11 files



diffuser-200x200mm-cornerpiece.stl

☐ print 4 of these



diffuser-200x200mm-midpiece.stl

☐ print 1 of this



diffuser-200x200mm-straight.stl

☐ print 4 of these



diffuser-centerpiece-random-2.stl

☐ print 2 of these



diffuser-cornerstone-random-1.stl

☐ print 2 of these



diffuser-led-profile-200mm-straight-bottom.stl

☐ print 4 of these



diffuser-led-profile-200mm-straight-top.stl

☐ print 4 of these



diffuser-led-profile-200x200mm-corner-bottom.stl

☐ print 4 of these



diffuser-led-profile-200x200mm-corner-top.stl

☐ print 4 of these



diffuser-strip-300x165x034.stl

☐ print 8 of these at 0.12mm layer height and first layer 0.1mm



diffuser-screw-cover-20mm.stl

☐ print 6 of these



diffuser-led-profile-200x200mm-corner-bottom.stl



diffuser-led-profile-200x200mm-corner-top.stl



diffuser-led-profile-200mm-straight-top.stl



diffuser-led-profile-200mm-straight-bottom.stl



diffuser-200x200mm-endpiece.stl



diffuser-100x200mm-midpiece.stl



diffuser-led-profile-100mm-straight-top.stl



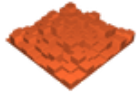
diffuser-midpiece-100x100mm.stl



diffuser-centerpiece-random-1.stl



diffuser-centerpiece-random-2.stl



diffuser-200x200mm-cornerpiece.stl



diffuser-led-profile-100mm-straight-bottom.stl



diffuser-100x200mm-endpiece.stl



diffuser-200x200mm-midpiece.stl



diffuser-screw-cover-20mm.stl



diffuser-strip-250x165x034.stl

☐ print at 0.12mm layer height and first layer 0.1mm



diffuser-screw-cover-20mm.stl

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