

ESMA - 3D



This is how the ESNA-3D will look like, once you finished this tutorial.

This is our way to do it, but you may find a better way. Then we would be very pleased to hear and learn from you.

Although it is quite some gear in use, it all fits into a bigger backpack as we will show you at the end of this tutorial. As with many other setups, we start with building some modules, so things are easier to handle during the setup.

This tutorial will start with the speaker-stand

In the background, you can see the modules that we prepared for this project.

For each of the eight rods, we used two 26-cm rods and screwed them together.

This has two major advantages:

First, the rods are 52 cm long instead of one 50 cm rod.

This will become important in a minute.

Second they fit much better into the backpack.

In the picture below, you can see the aluminum metal disk, which is still a prototype. In the final version it will become a 2 cm thick metal disk with eight 3/8" thread wholes.



The first kind of the modules consists of two 26 cm rods, screwed together. On the picture they are not fully screwed together, so you can see it much easier.



On the left-hand side there is a rapid-adapter with a microphone clamp and a holder for another microphone clamp.

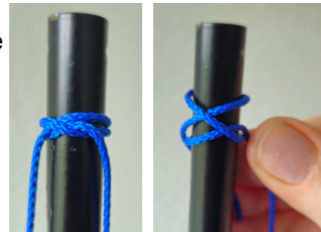
As we will have four hypercardioid microphones pointing upwards, we need four modules of this kind.

The other type of module consists of two 26-centimeter rods screwed together. This creates a total length of 52 cm.

At one end, we attach a rapid adapter and a microphone clamp. Please note that in the picture, the two rods are not fully screwed together so that you can see it more easily. In reality, they must be screwed all the way in!



We screw in a 26 cm rod on top of the metal disk and attach the two nylon strings with the tent rope tensioners at both ends of the string. You can use a clove hitch or any other knot. Just make sure, you fix the strings somewhere in the middle of their length.



These strings are supporting the modules with the two microphones to reduce the forces of the lever.

Put the sling around the rapid adapters and turn the sling one around the rapid adapter. On the modules, with the additional holder, this goes between this holder and the rapid adapter.



This is how it should look, once you tighten the tensioners.



Now we apply all the eight cardioid microphones and angle them down by about 30°.

In the middle we prepared a splitter for the cardioid microphones without an additional hyper-cardioid microphone. These will all be connected together for more convenience on connecting them to the recorders.

If you look closely the splitter has been marked with a colored (green) Velcro band. So you can distinguish the splitters much easier.



We have connected four single cardioid microphones with XLR connectors and placed four hypercardioid microphones pointing upwards.

It is important that their diaphragms are as close as possible to the diaphragms of the upper cardioid microphones. We use the XLR connectors to extend these microphones and push them higher up.

Your mileage may vary depending on your equipment. If your microphones are shorter, you may need to drill another hole in the holder and screw the microphone clamp a little higher up.



Here we added another four channel splitter and connected it to one side of the array, all the microphones in the front as L, Lfu, R, Rfu.

On the picture below, all microphones of the ESMA-3D array have been connected. Make sure, that the distances between every pair of cardioid microphones is exactly 55 cm. This may become a little bit tricky, but with some experience you will master it fast.



We thought about having an additional microphone above the middle of this array. Michael Williams has once named such a microphone position „The voice of God“. So we feel free to call it the same.

In this case we used an „omni“ microphone. One reason is, it will capture everything from up above and the second reason is, we have a quite good decorrelated omni for low-frequencies.

If you want to set up this system quickly, you may want to loosen the screw on the speaker stand adapter carrying the metal disk with eight arms and "the voice of God." If you need to go through doors, it's helpful to attach the "Voice of God" microphone and its clamp once you reach your desired position.

The EMSA-3D weighs about 14 kg. It's not too easy to carry.



This is the whole gear we use for the setup of the ESMA-3D array.

Once all gear is in the backpack, its total weight will be ~16.5 kg. The speaker stand will add another ~ 3.5 kg, so all in all the total weight will be 20 kg.



This is a look inside the backpack. Please note the extra batteries. You never have too much of them with you. Promised! We used every windjammer we have, so you see quite a mixture of them here.

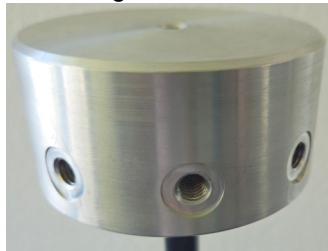


The three 15m multicore cables will be fixed outside on the backpack.

It is quite understandable, that we can't use the light stands you may know from other setups we did. We tried, but it didn't work. The speaker stand is strong enough (max load: 30 kg) to safely carry this array.

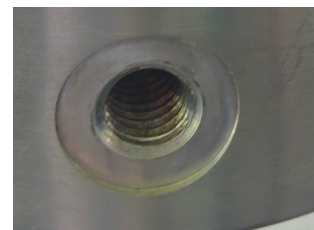
One word on the metal disk: This is quite easy to build for a qualified metal shop. We learned that it is also a good idea to have an extra 3/8" thread whole on the top-side.

The eight thread wholes are at every 45° angle around the disk.



If you look closely, you'll see that the holes are surrounded by a flat, milled circular area.

This gives the rods a larger contact surface and allows them to bear more weight. This will cost a little extra when building it, but it pays out immediately.



Now its time to synchronize your recorders, find a interesting place to record some great soundscapes. Have fun and great recordings!