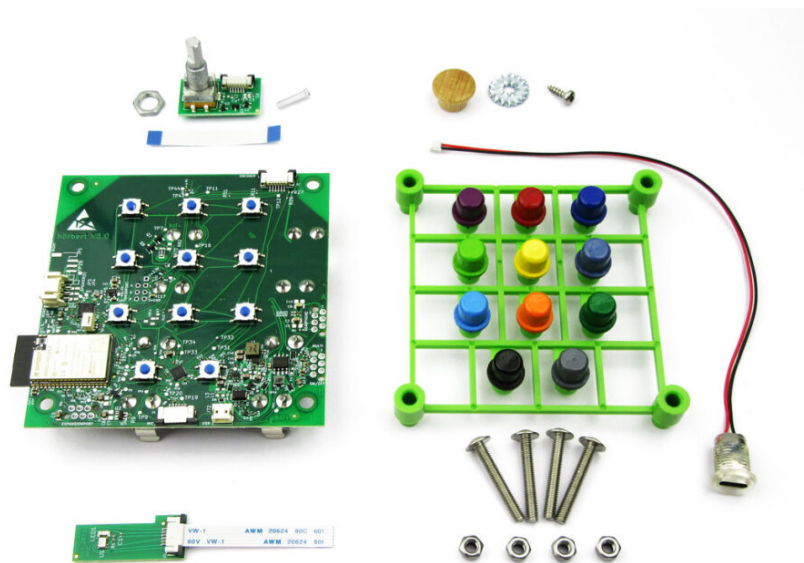


# hörbert DIY Upgrade Kit for hörbert 2011 – Info Sheet

## Scope of delivery:

- 1x motherboard V3.x
- 1x wooden keycap set
- 1x green plastic key frame
- 1x rotary encoder with cable and nut
- 1x lightpin for LED display
- 1x blind plug (after removal of the toggle switch with screw and flap disc)
- 1x voice microphone with cable
- 1x screw/nut set for board mounting
- 1x USB-C socket with cable



## Hello Maker,

We are pleased that you have chosen our hörbert upgrade kit. This allows you to convert your hörbert 2011 to the electronics of hörbert 3.0. If you have built your own radio player with an electronics kit in 2011 and now want to upgrade, it is best to contact our service team in advance if you are not sure whether our parts and cables are suitable for your own construction.

## You will need the following tools:

- Socket wrench (socket) SW7, SW11, SW10 and SW14
- Allen key 2.0 mm
- Allen key 2.5 mm
- Drill bits 2 mm, 8 mm
- Wood drill bit 10.5 mm with centering tip
- TORX Screwdriver T10
- Measuring slider or ruler
- Long tweezers (optional for microphone connection)
- Pliers (optional - for installation of the USB-C socket)

## Safety instructions

Electronic components are sensitive to static electricity. Ground yourself before unpacking the electronics so that you do not give the material an electric shock and it is best to work on a professional surface, or at least on a wooden table with a cotton cloth or other suitable surface. Do not wear rubber soles on plastic carpet. Leave the electronics in the ESD protective bag for as long as possible and only unpack them when you install them right away. Don't drill, saw, or file the board, because it has intermediate layers that short-circuit. Never plug or unplug cables while any part still has voltage. This means: Always remove batteries beforehand! Removed electronic components must not be disposed of in the residual waste, but must be disposed of in electronic waste.

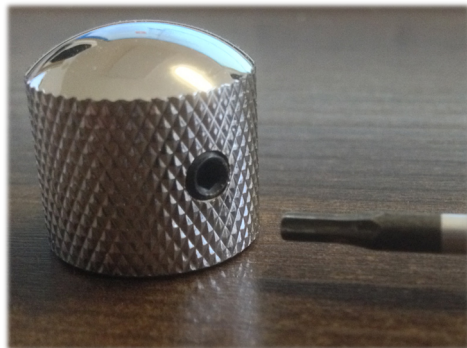
## Step-by-step instructions

### Disassemble toggle switch

First, loosen the nut around the toggle switch with an SW14 socket wrench. **Unplug all cables inside (switch, speaker, volume control, circuit board)**. Remove any components that you want to replace.

### Disassemble potentiometer (volume control)

Loosen the knob on the potentiometer. To disassemble the knob, you need a 2.0 mm Allen key to loosen the small, deep inside grub screw of the knob (turn counterclockwise):



*Figure 1 - Knob with grub screw*

Then pull the button upwards. You will need the rotary knob again later. Loosen the nut around the potentiometer with a SW10 socket wrench and remove the potentiometer.

### Remove the board

Inside the four nuts that hold the screws of the board in place, use an SW7 socket wrench. You don't need the nuts anymore.

Carefully remove the circuit board and the buttons. You don't need these parts anymore. Loosen the front screws with the Allen key 2.5 and hold against them from the inside with the SW7 socket wrench.

Remove the front screws, as well as the green wooden spacers and flap washers inside. You don't need all these parts anymore.

## Drilling

Draw two drill holes for the noses of the new **volume control** (rotary encoder) with 12 mm spacing on the center line of the hole.

Next, draw the hole for the **lightpin with LED** . Set the drill hole 9 mm away from the edge of the hole where the volume control was previously mounted:

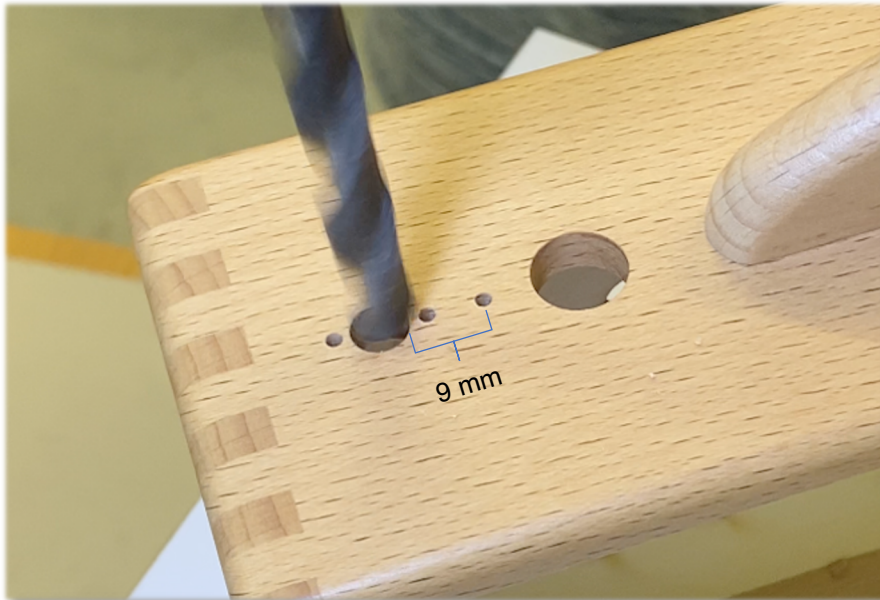


Figure 2 - Drill holes for encoder lugs and LED

Draw the hole for the **USB-C socket** : Lie hörbert on the table with the open back wall facing you. Now place it on the left side so that the side panel next to the speaker is facing you. Draw the drill hole with the help of a ruler **in the middle and 1 cm** above the dark brown tines:

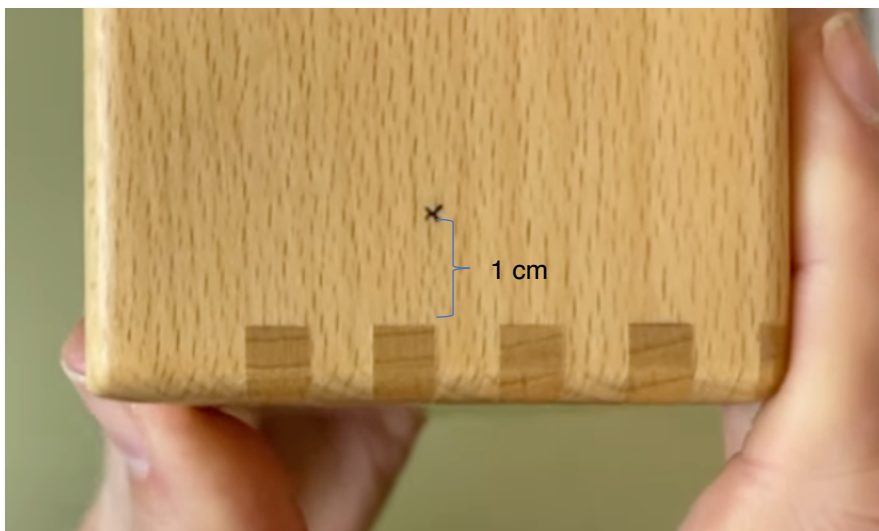


Figure 3 - Mark the hole for the USB-C socket

Next, draw the drill hole for the **microphone** . Place it at a distance of 10 mm from the lower frame of the wooden frame and in the middle under the lower right screw:



Figure 4 - Microphone LED Display Drill Hole

Now carefully drill the holes for the **side noses** of the **encoder and the microphone**. Use a **2 mm drill bit** for the holes.

Drill open the **opening** for the new **encoder with an 8 mm drill** . Expand the two previously drilled, adjacent holes into slots with a small screwdriver:

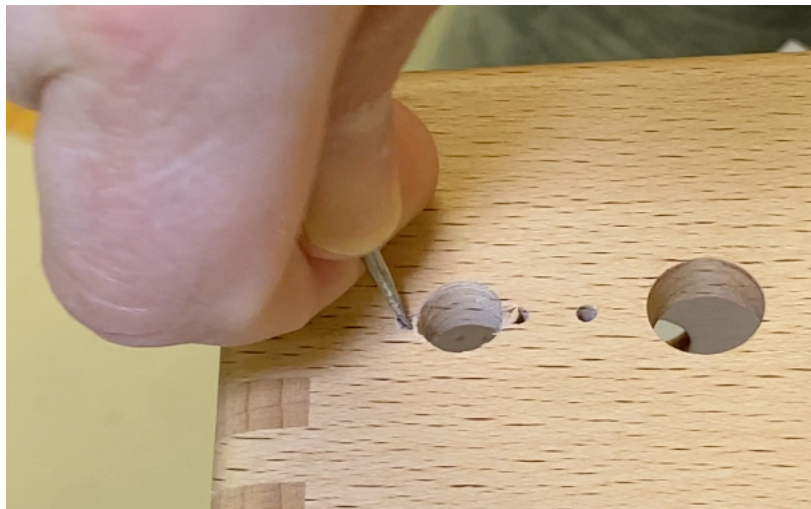


Figure 5 - Widening Holes for Encoder Lugs into Slots

Work on the edges a little more with a small file:

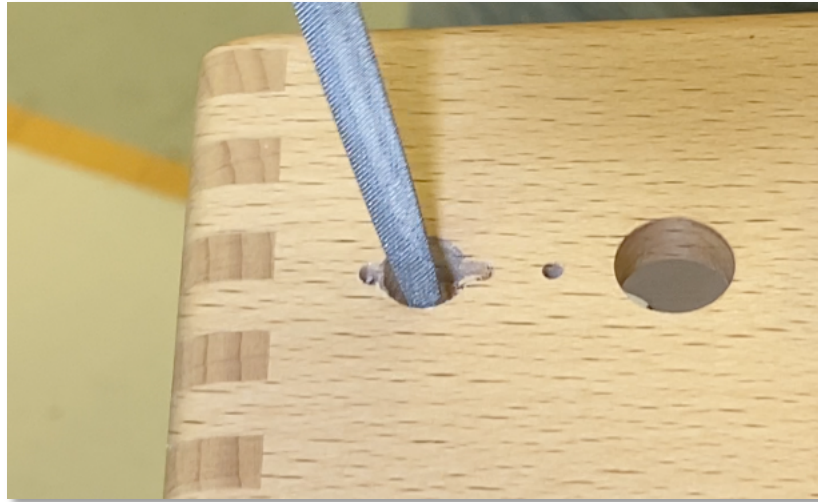


Figure 6 - File the edges of the encoder opening smooth

Now drill the hole for the **USB-C socket** with a **10.5 mm wood drill bit** with a centering tip. Carefully place the wood drill bit with centering tip on the side wall and slowly drill open the opening for the bushing.

### Installing the blind plug

Insert the blanking plug into the opening of the previous toggle switch from above. Place the flap disc on the TORX T10 screw and screw the screw into the blind plug from below with a TORX T10 screwdriver.

### Insert Lightpin

Insert the small lightpin into the drill hole as far as possible from the top and then press it all the way down with a tool, e.g. with the hard rubber back of a screwdriver, until it is firmly anchored.

### Mounting the encoder with rotary knob

Open the two small black clasps on the encoder by sliding them forward. Now plug the ribbon cable into the encoder with the white side up and close the fasteners again. Now insert the encoder from the inside through the previously widened encoder opening. Then place the nut on the encoder and tighten it with the SW11 socket wrench.

The knob must be placed so that the side with the grub screw rests against the flat side of the encoder. Then tighten the small grub screw inside the knob again clockwise with a Allen key 2.0. **Between knob and wooden housing approx. Allow 1 mm of air** so that the knob can still be pressed down after tightening.

### Microphone installation

We deliver the microphone already with the cable plugged in. If the cable is loose in the package, open the two small black clasps on the microphone board by sliding them forward, plug in the cable **with the white side up** and close the clasps again. It may be easier for you to connect the microphone to the new board later if you unplug the microphone cable from the microphone before the board assembly step, first plug

it into the board and only then - e.g. with the help of long tweezers - plug it back into the microphone and press the closures closed with the tweezers.  
On the back of the microphone board you can see two small openings. The very small hole is the opening for the sound, the slightly larger hole is for the LED:

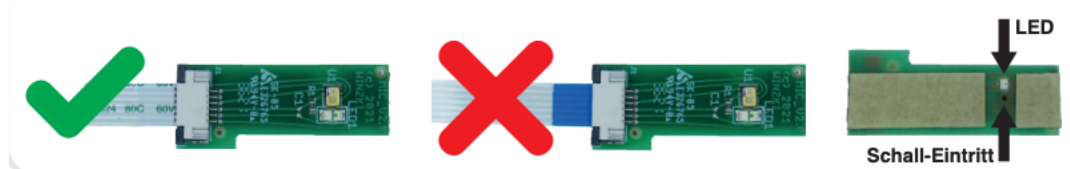


Figure 7 - Microphone in detail from above and below

The LED lights up red when a recording is in progress:



Figure 8 - Microphone LED Lights Up Red When Recording

Peel off the protective film from the tape on the microphone board.

Now position the microphone so that the smaller sound hole is completely visible and the LED hole is at least partially visible behind the opening for the microphone drilled in the previous step.

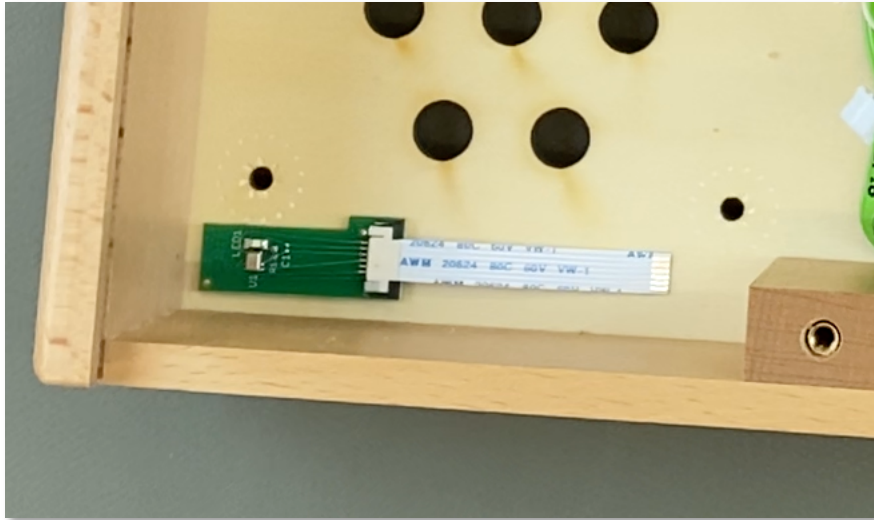


Figure 9 - Position of the microphone board from the inside

Press the microphone firmly against the wooden inner wall so that the tape has firm contact.

### Installation of the USB-C socket

Take the USB-C socket with cable and run the cable through the hole opening from the outside. Insert the plastic socket into the opening. Make sure that the slot is positioned as horizontally as possible and press the socket tightly. To press the socket down, you can audibly press the socket down onto the padded work pad. If the bushing is a little crooked, you can then turn it straight from the inside with pliers.

### PCB and encoder assembly

The board is fastened with a total of four screws and matching nuts and the green button frame.

Take one of the four new front screws and insert it through the front from the front. Hold your hand on the front of the screws that have not yet been attached so that they do not fall out when you carefully place them on the front of the screws. Now place the **green key frame** with the colorful wooden caps on the screws from the inside:

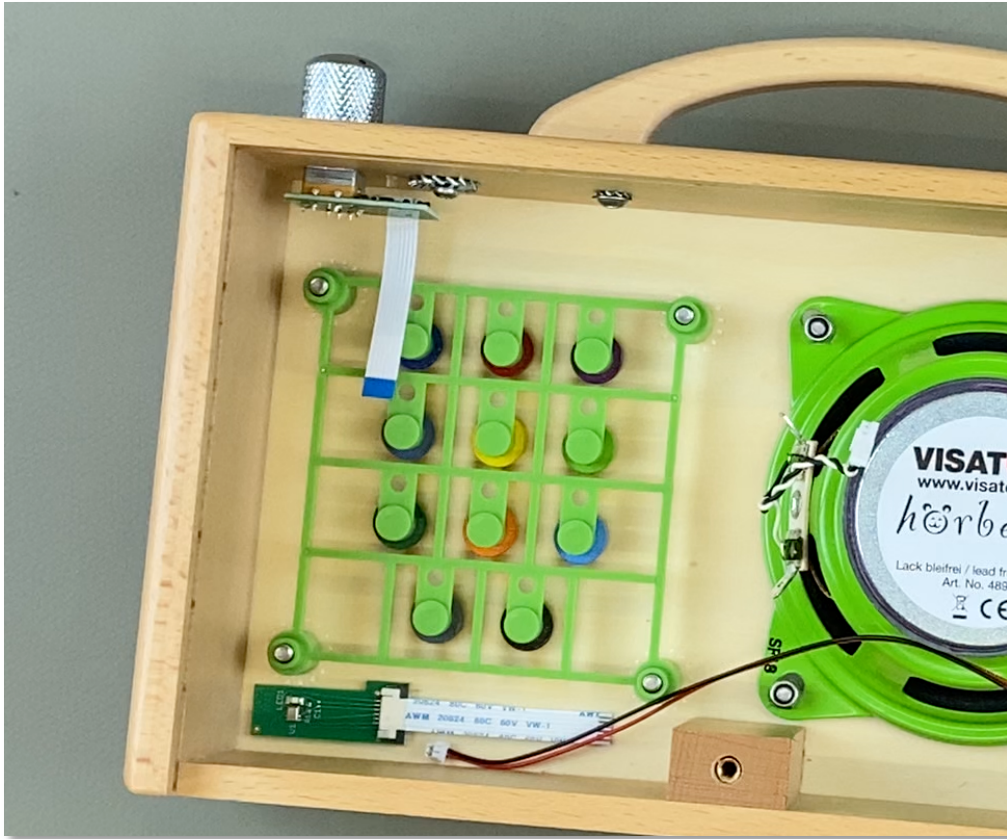


Figure 10 - Key Frames Inserted with Keycaps

Pick up the board and open the two small black clasps on the bottom of the board at the connectors for encoders and microphone cables (white jacks labeled "WE") by gently sliding them open with two fingers.

It must be plugged into the connector for the microphone cable with the white side facing up and the black fasteners must be pressed closed again.

**Caution:** Never swap microphone and encoder. This will destroy the microphone!

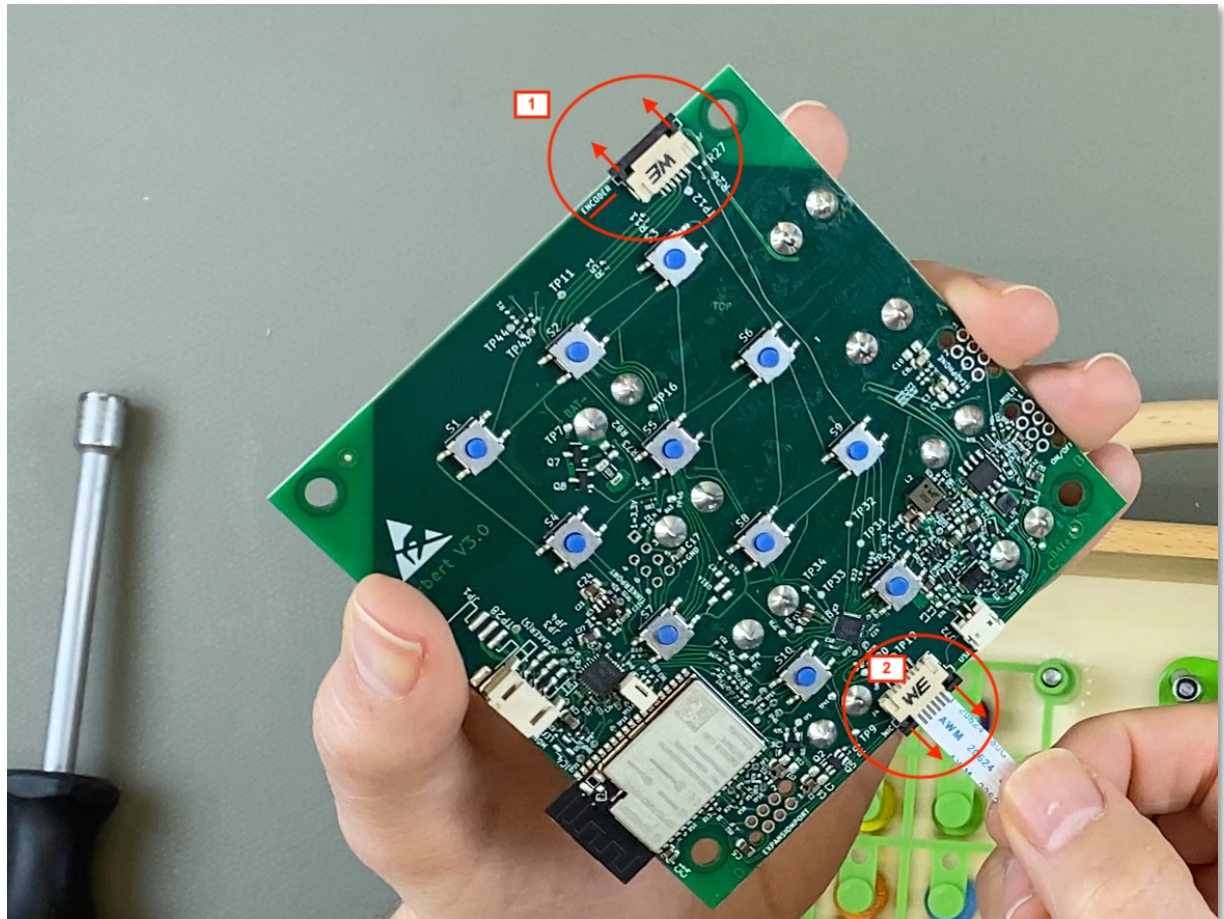


Figure 11 - Connector for Encoder (1) and Microphone (2)

Now plug the cable of the USB-C socket into the connector provided to the right of the connector for the microphone cable:

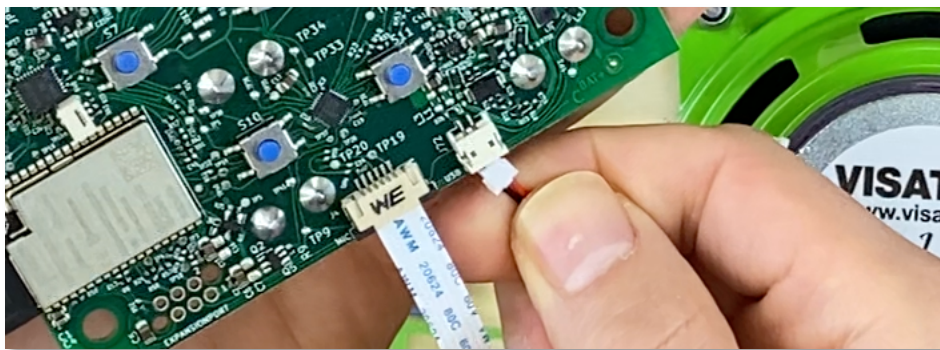


Figure 12 - USB Female Connector

Now turn the board by turning it clockwise to the front so that the metallic battery clips are facing upwards towards you. Plug the encoder cable into the top of the board into the connector for the encoder. For this connector, there is a printed label with the word "encoder" on the left side of the board. (Marked with underscore in Figure 11) Finally, plug the speaker cable into its socket on the right side of the board:



Figure 13 - Speaker Cable Connectors

Now place the board completely on the previously inserted screws of the green button frame and press them down a little.

Now connect the microphone cable to the microphone board that has already been glued in. Use long tweezers to help you do this. This makes it easier to slide the cable into the connector on the microphone board and then push the black clasps shut.

Take the hexagon socket 2.5 and the socket wrench SW7 and tighten the board screws from both sides.

**Attention:** Be very careful and do not tighten too tightly so that the wood varnish around the front screws does not tear.

**Congratulations! Your hörbert upgrade is complete.**

Do you have any questions?

Write to us at [service@hoerbert.com](mailto:service@hoerbert.com)

Instructions and videos for the new features can be found on our homepage in the service area at:

<https://en.hoerbert.com/customer-service/manuals-and-videos/>