



The **Piezothings** is a small feedback instrument containing a piezo microphone, a FET preamp, an amplifier and a small high quality transducer. The mechanical feedback through an object touching the mic and transducer produces both a physical signal vibrating the surface it is placed on as well as an electronic signal available at the headphone/line output.

The unit is powered by a built in battery and charges via a mini USB connector. It consumes very little power so it can be run intermittently for weeks or up to 12 hours continuously on a charge.

The size is 54 x 85 x 11mm and it weighs 70 grams

The **PiezothingsBT** is a version of the unit that contains a Bluetooth transmitter to transmit audio to various devices.

See further down for details.

### **How to use it**

The on button is situated next to the USB jack and on is indicated by a green LED  
A red LED light is on when the unit is charging and a green LED turn on when the charging is finished

The knob controls the level of the microphone preamp, the signal is then sent to the amplifier and is outputted through the transducer. The signal is also split before the transducer and is available at a stereo 3,5mm jack that can be used for headphones or as a line out to feed other equipment or record.

At low volume settings the unit can be used as a contact microphone. At maximum setting the feedback is very pronounced, lower settings give more subtle but also sometimes more complex effect.

Placing the microphone and the transducer in contact with a guitar or piano string produces very interesting results as does placing it on boxes or flat surfaces, thin surfaces vibrate louder than more compact and thicker materials.

The frequency and timbre of the feedback can be adjusted by moving and damping the surface or the unit with your hands or other objects.

Very small movements or adjustments can have big effects on the sound so very little force is needed to operate the Piezothings, too much force can stop it from oscillating since the transducer movement is restricted. Be careful about hitting or banging the transducer against objects, it may result in damage.

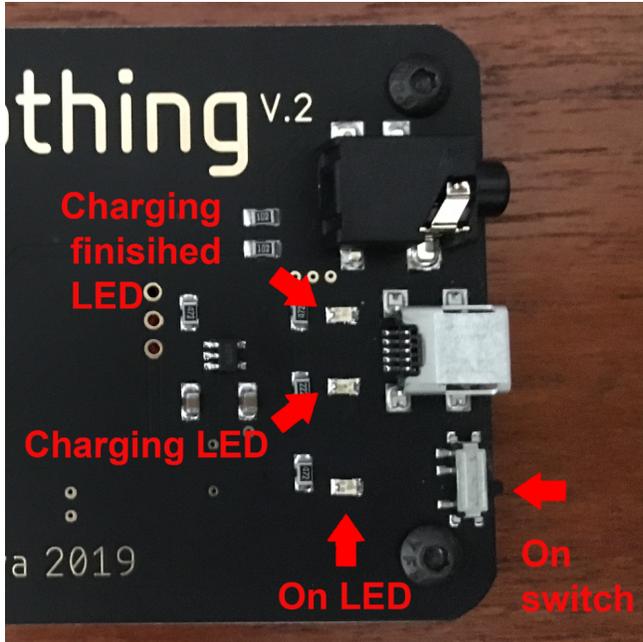
If you want to use it as a stand alone sound generator and simultaneously use the line out a very light cable is recommended so the weight of the cable doesn't dampen the vibrations, one made from an old pair of in-ear headphones works well.

Don't remove the protective tape on the transducer, it is a very powerful 3M tape material and it will be stuck forever to what you place it on! It is used when the transducer is meant to be permanently mounted in other applications

If you need to clean it use a dry microfiber rag.

Since anything can happen in experimental music I made the transducer easily changed out by unscrewing four screws and desoldering two wires. The same applies to the piezo microphone. The transducer is Dayton Audio DAEX13CT-8 from [www.soundimports.eu](http://www.soundimports.eu) and the transducer is [www.mouser.com](http://www.mouser.com) article number **81-7BB-20-6L0**

If you want to modify or need to repair it let me know and I will try to advise, contact me at this address: [instruments@araya.se](mailto:instruments@araya.se)



**Note:** If the power LED flickers at high feedback settings it is time to charge!

**Note#2:** If you want to use the shipping box as storage container for the unit remove the shipping label and cut the tape along the top edges to lift the lid:



## PiezothingBT



The BT is a Piezothing with an added Bluetooth transmitter board that allows you to stream the audio from the unit to a portable speaker, audio receiver or computer.

This is not a hi-fidelity audio transmission but rather a way to give the instrument another dimension!

There are two controls on the add on board, a separate power switch to turn it off and a button used to initiate connection to other Bluetooth units.

The primary application is to use a portable Bluetooth speaker as a manipulator of the feedback sound if located in close proximity of the unit, held in the air or placed on the same surface.

Experiment with placement and direction of the speaker, interesting phase cancellations may occur!

Also, the short delay inherent in the BT audio stream makes it behave similar to a tape echo at certain settings and distances between speaker and Piezothing.

The operation is very straight forward, turn it on, press the button and wait until it connects.

It can take up to 30 seconds for some units to connect and you often need to press a button on the receiving unit as well to have them pair.

If you have trouble connecting, power cycle the PietzothingBT and receiving unit.

The Blue LED changes its pattern when a connection is made.

The device name of the Bluetooth unit is "AC46\_SDK" if you want to connect with a device with graphic screen.

It is possible to use the line out/headphone connector at the same time but depending on the shielding of the cable and input impedance of the equipment connected you might experience some sound artefacts from the transmitter. It is hardly audible when the instrument is feedbacking but you might hear some low frequency pulses if using the Piezothings as a microphone with high gain settings.

The PiezothingsBT is available as a ready made unit or a DIY card to be installed by users with adequate soldering skills.

### **Do's**

Try it on any materials, windows, bowls, metal objects, boxes!

Try it on string instruments and inside pianos!

Try it both as an instrument and as a stand alone drone maker!

Use it as a contact mic!

Try using the line out to feed a speaker creating a second feedback loop!

Use two or more for interference experiments!

### **Don'ts**

Don't use it in moisture and water!

Don't heat it over 50 degrees Celsius, it is bad for the plastic and the battery!

Don't expose it to freezing temperatures with an empty battery, it might damage it.

Don't drop it!

Don't open it if you don't know what you are doing! :

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