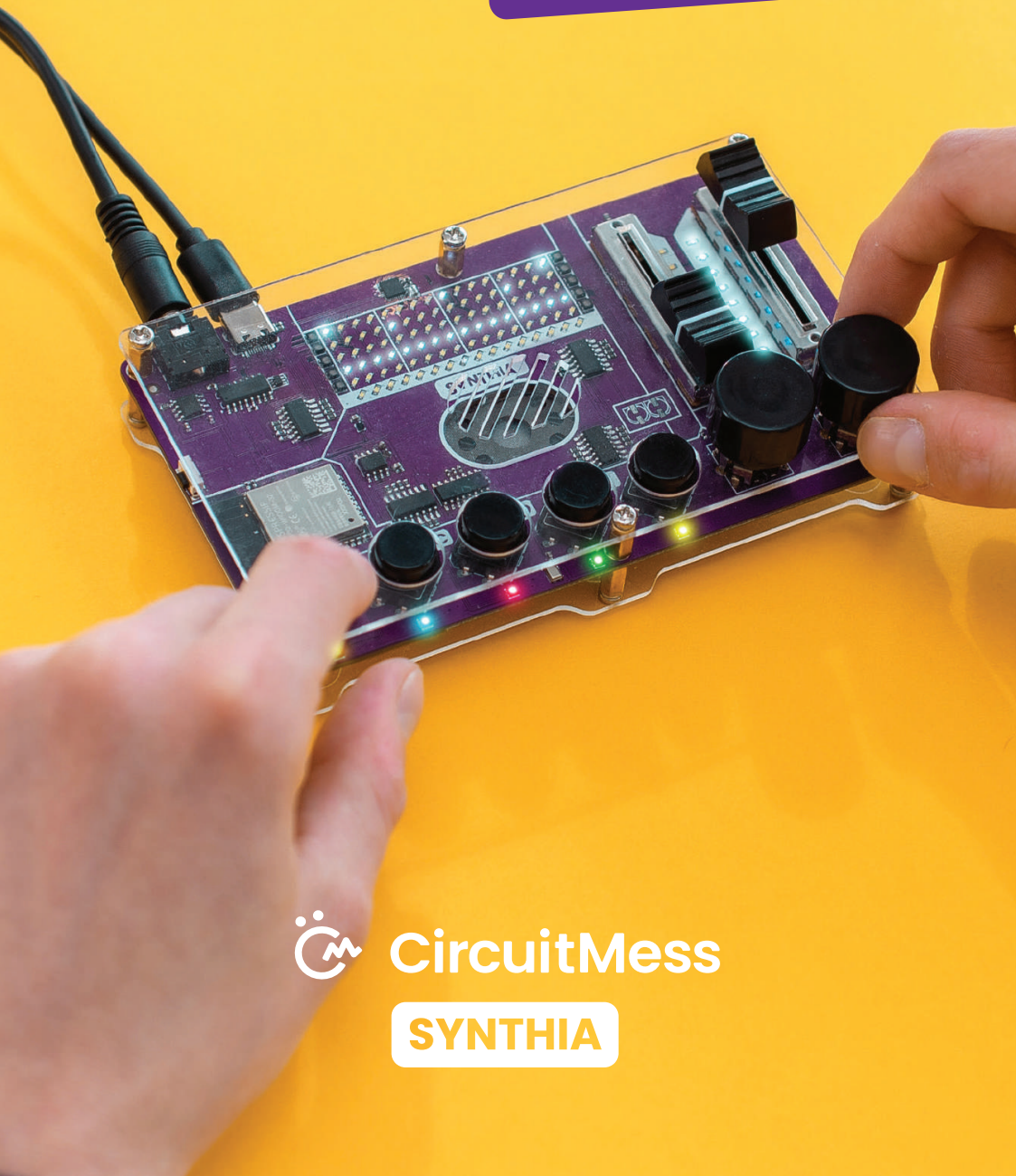


Creator's booklet

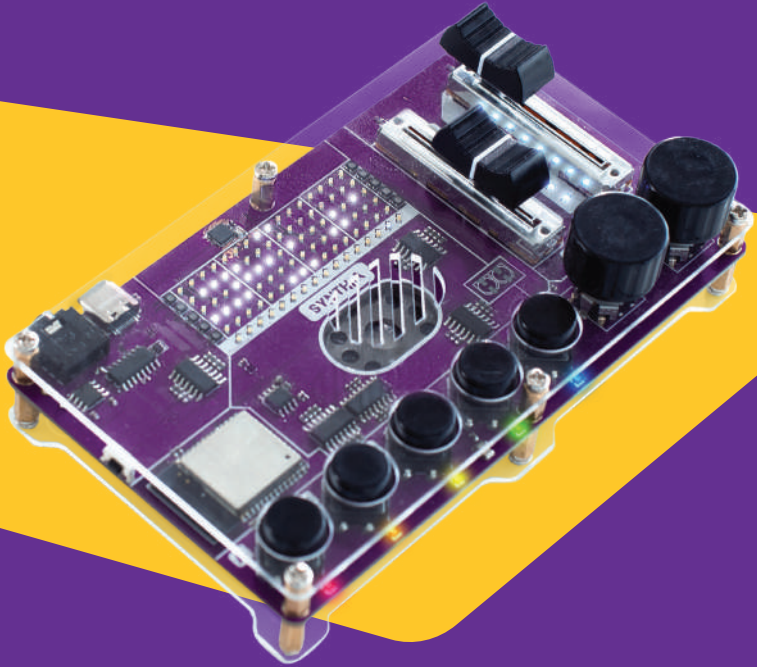


CircuitMess

SYNTHIA

Meet Synthia

Synthia combines the functions of a sampler, drum machine, sequencer, & synthesizer, and teaches about digital sound production



HOW DOES IT WORK?



1 Follow the online tutorials and assemble your Synthia



3 Play with the pre-loaded samples and make your own beats



2 Learn about microchips that produce digital sound



4 Hook it to a computer and code your Synthia

What is CircuitMess?



CircuitMess started in 2016 when Albert (our CEO) was 17 years old.

Albert loved tinkering with electronics and one of his first projects was a DIY game console.

People really liked the idea so he decided to launch it on **Kickstarter** where it raised \$100,745!

After that, **CircuitMess** was born.

We are a small and fast-growing team of tech lovers who wish to share our love of creating new technology with the rest of the world!

Behind the name

“Circuit” is a reference to electronic circuits. “Mess” is what best describes our workplace. Combine the two and you get CircuitMess!

You can do it!



All of our kits are designed, manufactured, and packed in Croatia!

The mission

Everybody knows how important technology is, but less than 1% of the population knows

HOW TO MAKE

new technology.



We're here to change that!

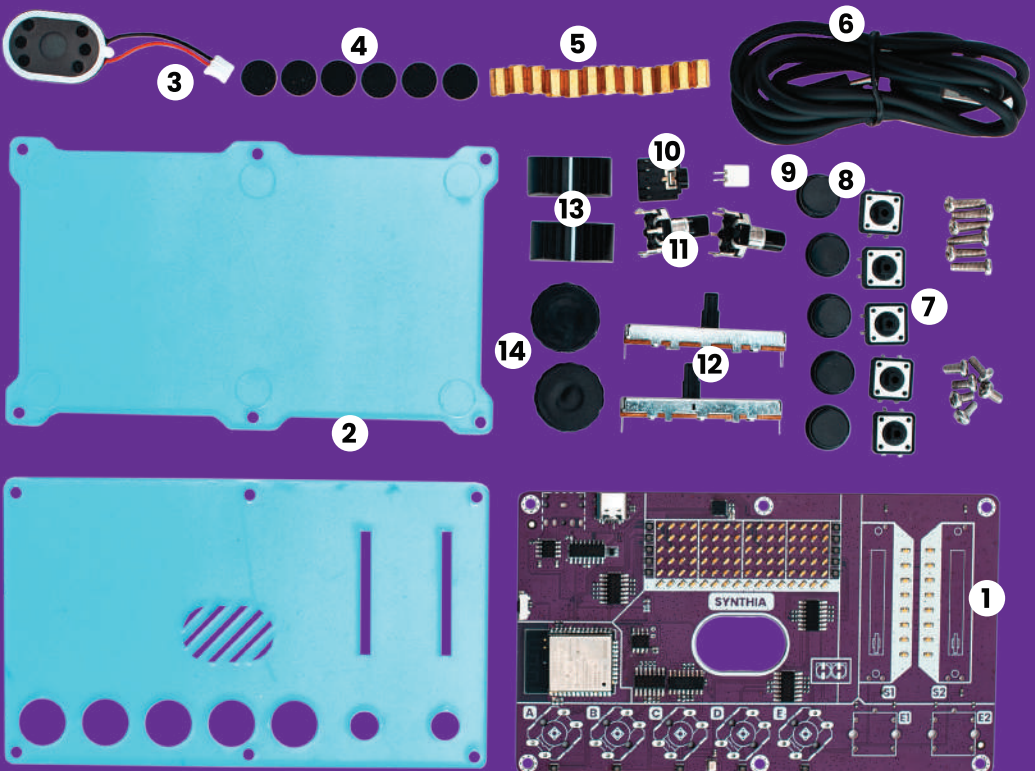
With our kits, we want to inspire people to be

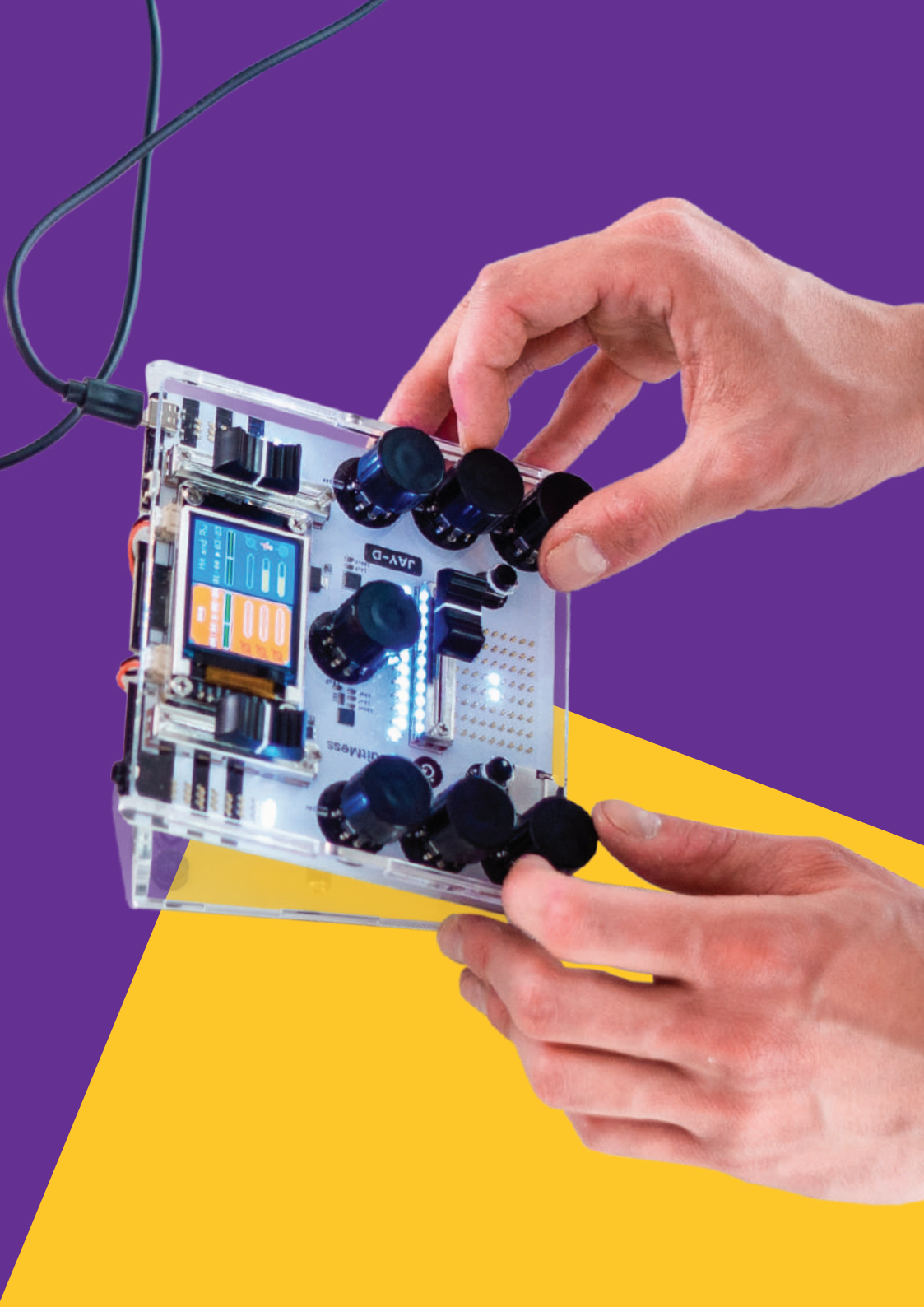
CREATORS,
instead of just consumers.



What's inside the box?

- | | | | | | | | | |
|---|---|-----------------------|----|---|----------------|----|---|--------------------------|
| 1 |  | Main circuit board | 6 |  | USB-C cable | 11 |  | Rotary encoders |
| 2 |  | Plastic casings | 7 |  | Bolts | 12 |  | Slider potentiometers |
| 3 |  | Speaker | 8 |  | Pushbuttons | 13 |  | Plastic caps for sliders |
| 4 |  | Rubber anti-slip pads | 9 |  | Button caps | 14 |  | Plastic knobs |
| 5 |  | Brass standoffs | 10 |  | Headphone jack | | | |





You'll learn about hardware



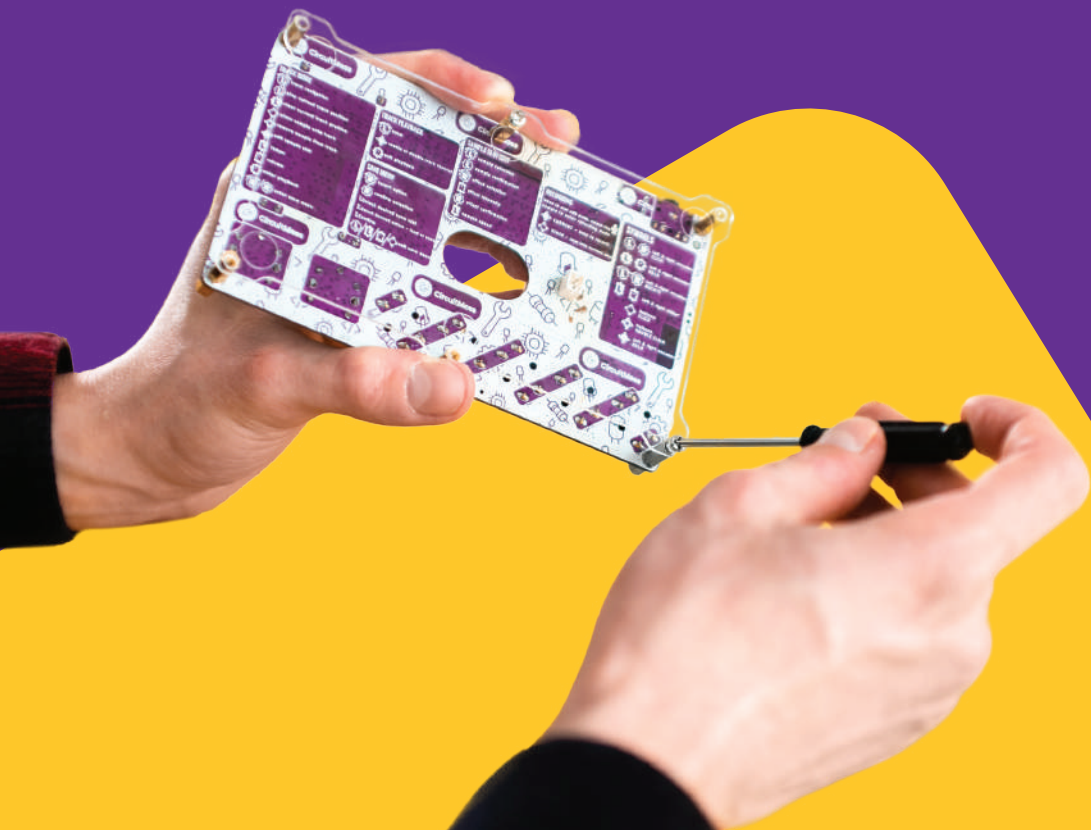
Learn how to **solder** and assemble your very own synthesizer

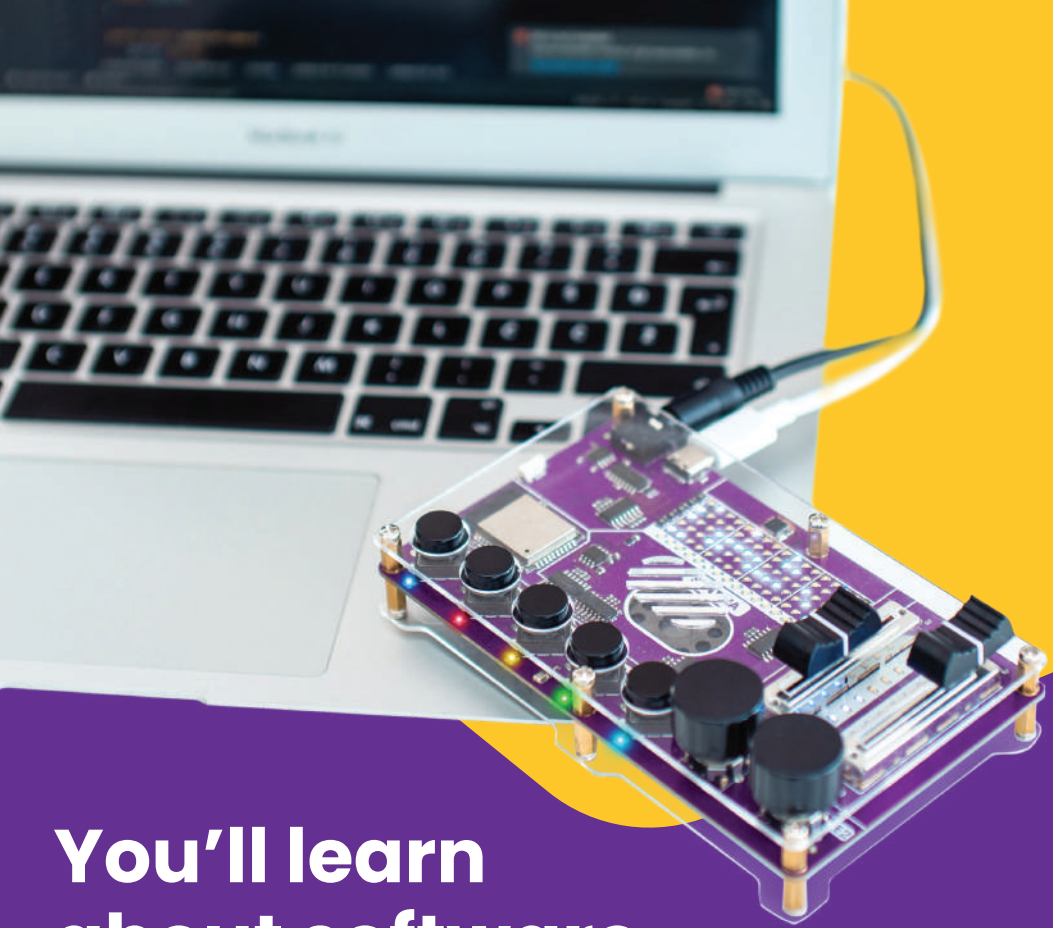


Learn about **MEMS microphones** and sound recording



Learn about music sequencers and digital sound **sample editing**





You'll learn about software



Learn about Digital-to-Analog signal conversion



Learn about programming and how to code custom light shows for the built-in LED grid



Learn how to edit sound recordings

Sampler vs Synthesizer – what's the difference?

Sampler

A sampler is an electronic musical instrument which uses sound recordings (or "samples") of real instrument sounds (e.g., a piano, drums or trumpet) to create music.

This is what samplers usually look like



Who uses it?

Everyone!

Samplers are usually used for creating electronic, pop, and hip-hop music.

Synthia comes pre-loaded with the following samples:



Kick



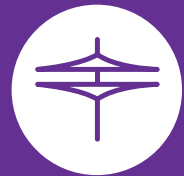
Snare



Clap



Closed
hi-hat



Open
hi-hat

Synthesizer

A synthesizer is an electronic musical instrument that generates audio signals. Synthesizers typically create sound by generating waveforms.

This is what synthesizers look like



What is a waveform?

A waveform is merely a graph displaying the shape and form of a sound signal.

Synthia synthesizes sound by applying different sound wave modifiers (we call them effects) to pre-loaded sound samples.

These are the four most popular sound waveform types

 Sine

 Sawtooth

 Square

 Triangle

Synthia comes preloaded with these sound effects:



High-pass

Cut out the low frequencies & make your samples sound tinny



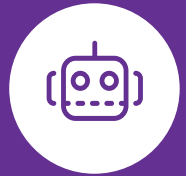
Low-pass

Cut out the high frequencies & make your samples sound muffled



Reverb

Use it to create echo and generate depth in your samples



Robotify

Makes your sound samples crunchy and "robotic"

Synthia can record sound samples



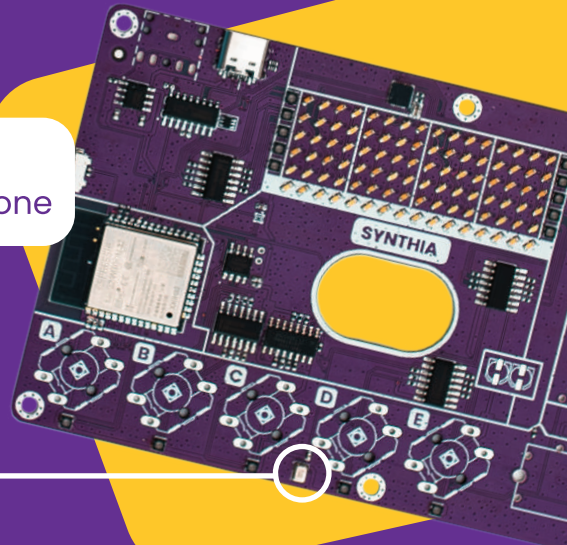
You can record your own samples into Synthia with the help of a built-in **MEMS microphone**.

Wanna make a beat using the sounds of your burps? **Let's do it!**

MEMS

stands for
Micro
Electronic
Mechanical
System

MEMS
microphone



MEMS is a technology used to create small integrated devices that combine **mechanical** and **electrical** components.

This particular technology allows the microphone to be small in size, durable, and easily mounted on an electronic device.

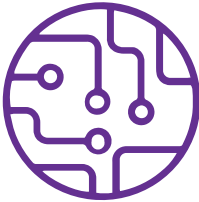
How do ones and zeros turn into sound?

When you push the buttons on Synthia, it synthesizes the sound and sends it in binary format to a tiny microchip called DAC.

DAC (Digital-to-analog converter) converts the binary signal into an audio waveform which then travels to the Synthia's speaker.

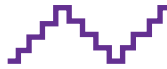
Digital signal

0100111010



Synthesizer

Conversion



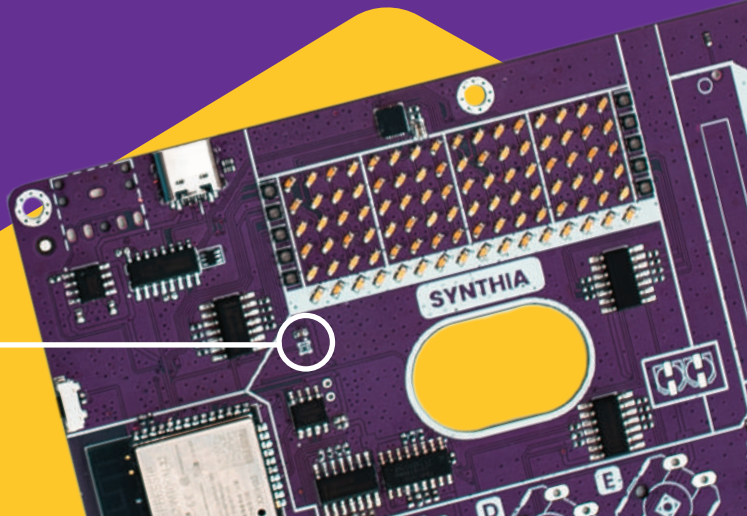
Digital-to-analog
converter

Analog signal



Speaker

DAC



Safety first!

Before you start with the assembly, pay attention to the following safety measures:



1

Handling a soldering iron and a screwdriver is **not recommended for children under the age of 9!**



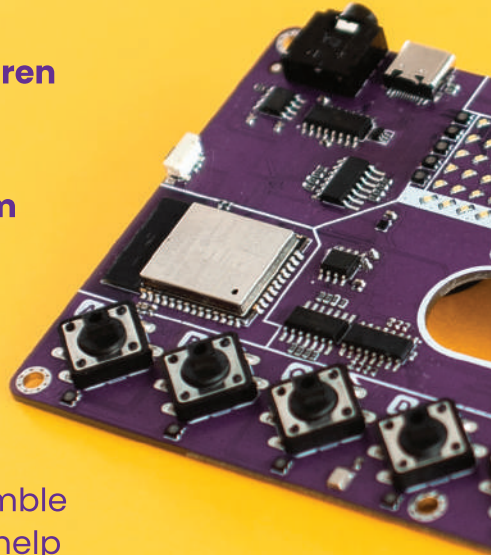
2

Keep Synthia away from young children! This product contains small components that are dangerous to children under the age of 3.



3

If you are a minor, assemble Synthia strictly with the help of an adult.



Synthia is not a toy for toddlers.

Closely follow all the instructions you received in this kit and those found on our online pages so that no one gets hurt.

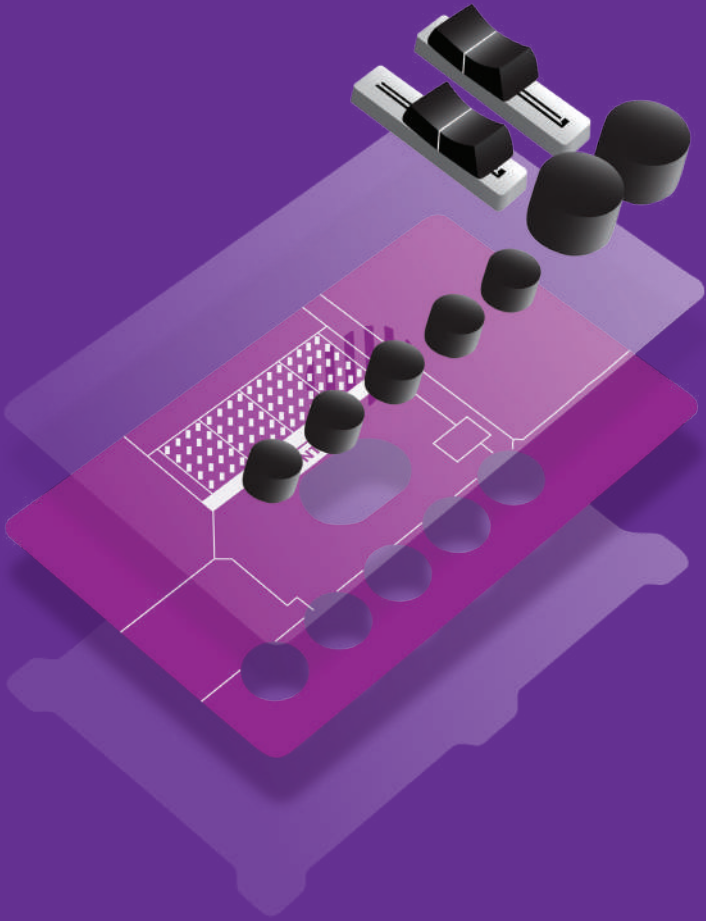
If you have never used a soldering iron or a screwdriver, **carefully follow the assembly instructions** on our website and, if necessary, ask someone more experienced or older than you to help you.

If you are having problems with our kit, contact our customer support via email at contact@circuitmess.com.

Happy soldering!

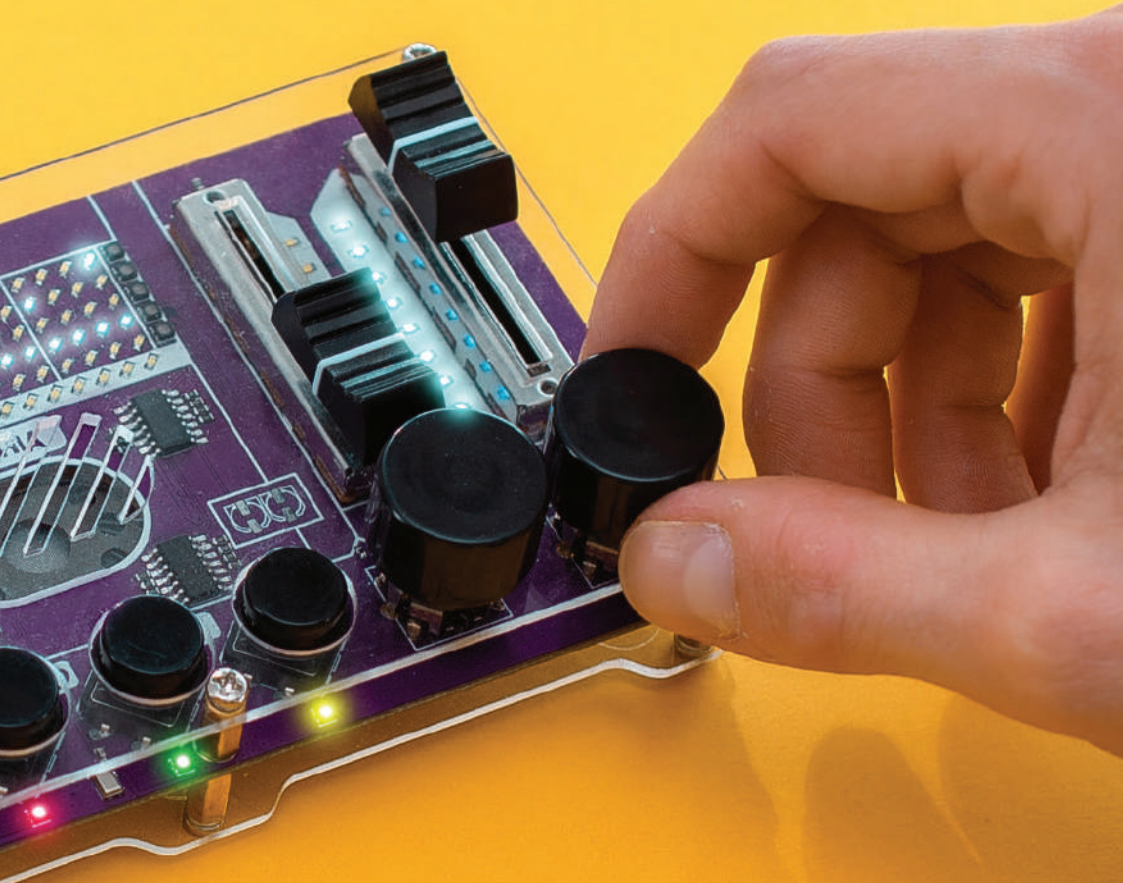
To build your Synthia, go to:

circuitmess.com/build



CircuitMess

SYNTHIA



 CircuitMess



