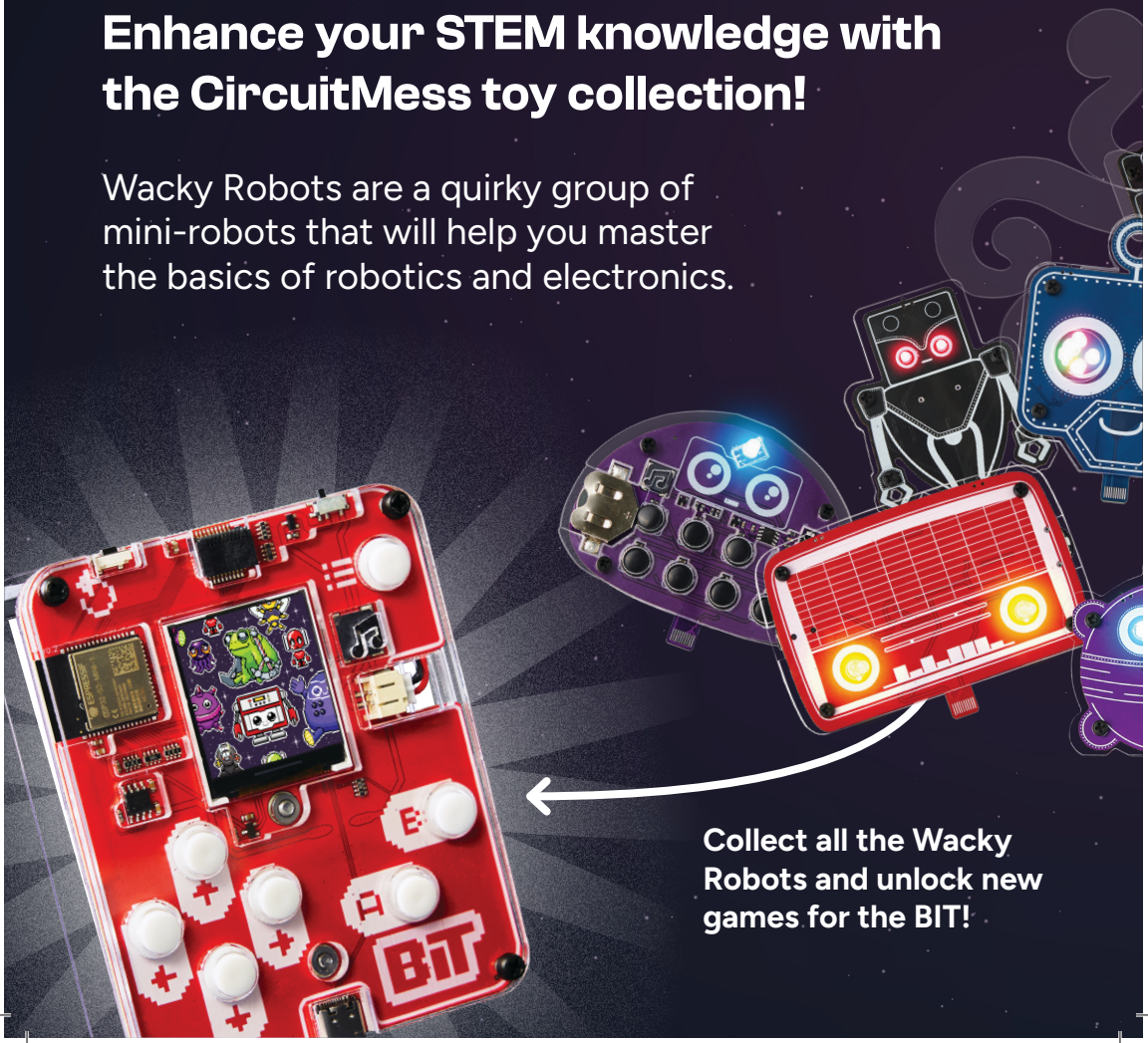
CREATOR'S BOOKLET

CircuitMess

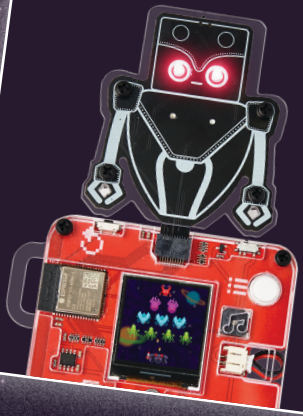
Enhance your STEM knowledge with the CircuitMess toy collection!

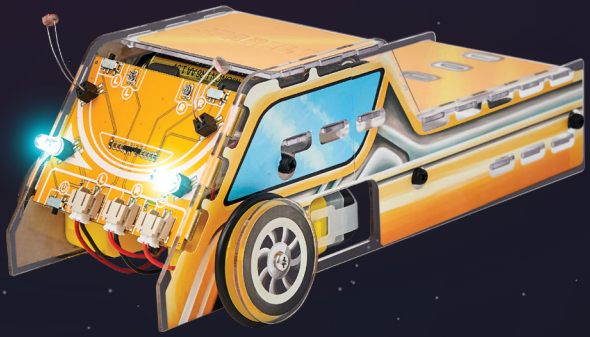
Wacky Robots are a quirky group of mini-robots that will help you master the basics of robotics and electronics.



Collect all the Wacky Robots and unlock new games for the BIT!

Insert the Wacky Robots into the BIT game console.





Connect your robots to Sparkly, a robot car that follows the source of light.

Sparkly, BIT, and Wacky Robots are sold separately.

Meet Buttons

Introducing Buttons, a DIY Wacky Robot that will introduce you to the exciting world of robotics and STEM.

With Buttons, you'll learn about different electronic components, integrated circuits, sound synthesis, and sound waves. At the end, you'll have a cool robot that plays music!

How does it work?

- Assemble your Wacky Robot
- Learn about sound synthesis and sound waves
- Turn Buttons on and have fun

What is CircuitMess?

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

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

People liked the idea, so he launched it on **Kickstarter**, which 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!

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

Behind the name

Circuit **Mess**

electronic circuits

creative mess in our heads

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?

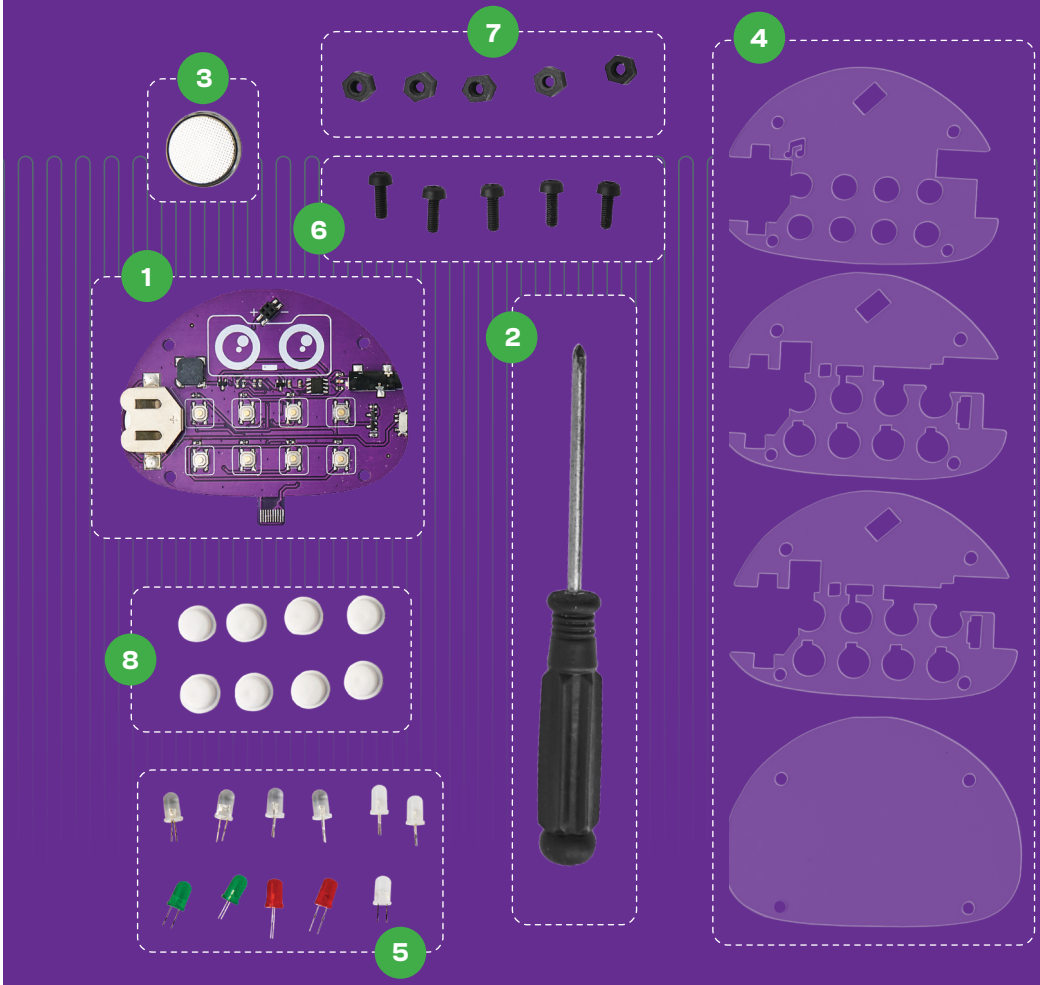
1.  PCB
2.  Screwdriver
3.  Coin battery
4.  Acrylic casings
5.  LEDs
6.  Plastic bolts
7.  Plastic standoffs
8.  Plastic buttons' caps

You'll learn about:

 Electronics and different electronic components

 Sound waves

 Sound synthesis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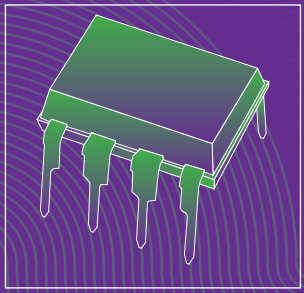
The 555 Timer IC: A Brief History and Fun Facts

The 555 timer IC, also known as the **NE555**, is a widely used integrated circuit that was first introduced in **1971** by **Signetics Corporation**.

Since then, it has become a staple component in electronics design, used in a variety of applications from timing and oscillation circuits to pulse generation and control systems.

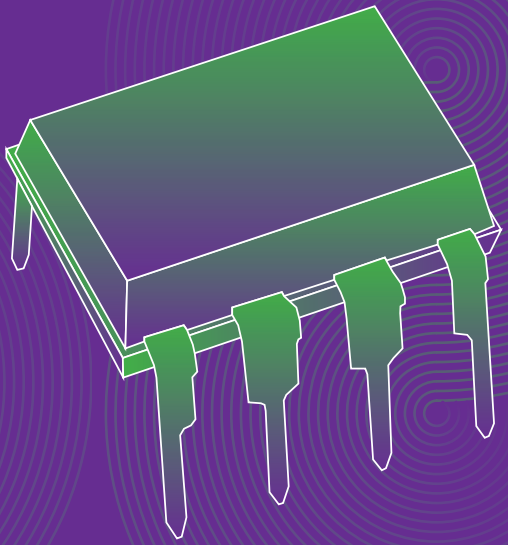


Interestingly, the 555 timer IC was not originally intended to be used in these applications. It was actually designed to be used in the manufacture of soap bubbles!

However, engineers soon discovered its versatility and began to experiment with using it in other applications.

One of the key features of the 555 timer IC is its ability to generate precise and stable time delays. This is achieved through the use of three resistors and two capacitors, which can be configured in a variety of ways to produce different timing intervals.

Another fun fact about the 555 timer IC is that it has been used in a number of popular **toys and gadgets** over the years, including electronic keyboards, remote-controlled cars, and even the original **Nintendo Game Boy**.



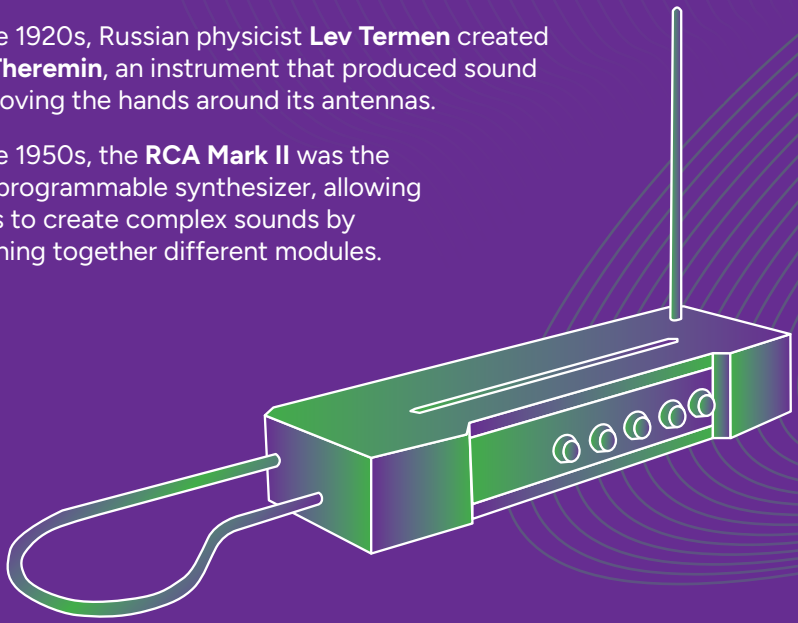
Despite its age, the 555 timer IC remains a popular component in electronics design, partly due to its low cost and versatility. In fact, it has been estimated that over a billion 555 timer ICs are produced every year!

The Evolution of the Synthesizer

From the first electronic instrument invented in the early 1900s to the powerful synthesizers we have today, the history of the synthesizer is a fascinating journey.

In the 1920s, Russian physicist **Lev Termen** created the **Theremin**, an instrument that produced sound by moving the hands around its antennas.

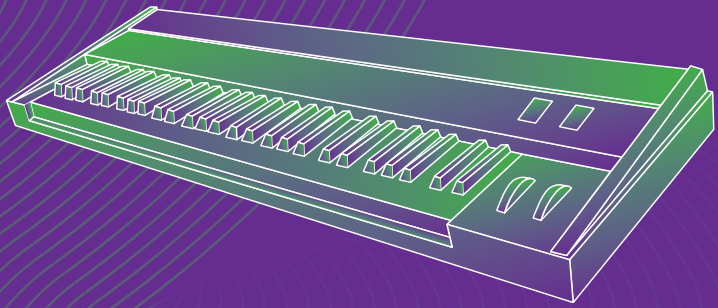
In the 1950s, the **RCA Mark II** was the first programmable synthesizer, allowing users to create complex sounds by patching together different modules.



In the 1960s and 70s, synthesizers became more widely available and affordable, and musicians started using them in popular music.

Wendy Carlos's "Switched-On Bach" album in 1968 was a landmark moment for the synthesizer, introducing the instrument to a wider audience.

The 80s saw the rise of digital synthesizers, with companies like Yamaha and Roland leading the way.



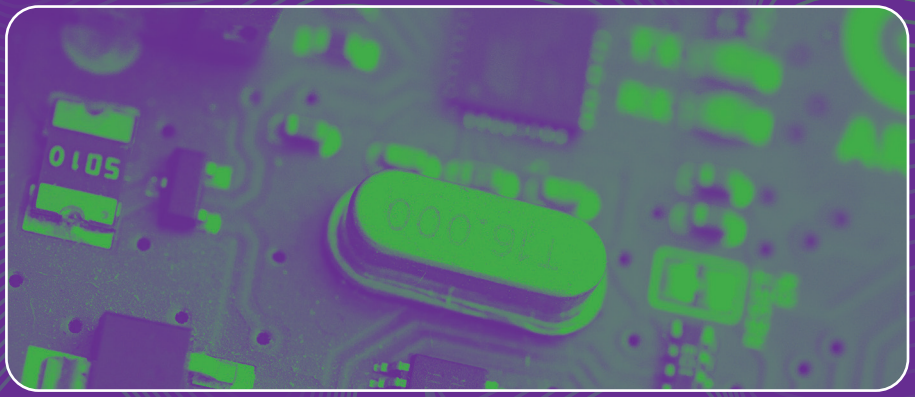
Today, synthesizers come in all shapes and sizes, from portable mini synths to massive modular systems.

They are used in all genres of music, from pop to electronic to film scores.

The development of software synthesizers has made them more accessible than ever, with musicians able to create and manipulate sounds on their computers. The synthesizer has come a long way since its early days, and it continues to be an essential tool for music creation and innovation.

The Enchanting World of Oscillators: From Radio Waves to Electronic Music

Since their inception in the late 19th century, **oscillators** have played a pivotal role in modern electronics, including radio transmission, audio synthesis, and signal processing. At their core, **oscillators are circuits that generate an electrical signal that oscillates at a specific frequency**. These signals are then used to create sound or transmit data wirelessly.



In the case of Buttons, the 555 timer IC serves as the heart of the oscillator, producing a waveform that translates into sound.

But oscillators come in many shapes and sizes, and can produce a variety of waveforms, from simple sine waves to complex multi-wave shapes.

Oscillators have been used in a wide range of applications, from radio and television broadcasting to medical equipment and military communication systems.

In electronic music, they form the backbone of synthesizers, allowing musicians to create and manipulate sounds in real time.

With Buttons, anyone can tap into the power of oscillators and explore the exciting world of electronic sound creation.
By combining the simplicity of button pressing with the complexity of oscillator technology, Buttons invites users to become a part of this rich tradition of musical experimentation and innovation.

Fun Synthesizer Facts

1

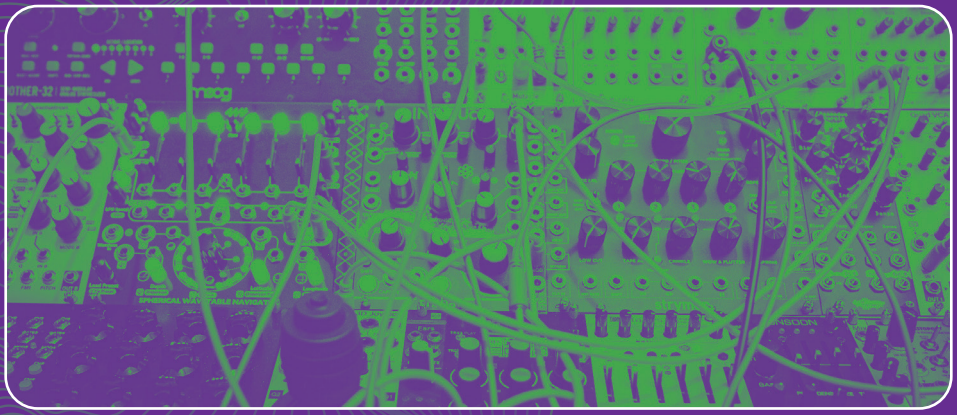
Synthesizers can make almost any sound you can imagine, from the sound of a spaceship taking off to the noise a rubber duck makes.

2

Some of the most famous songs in history use synthesizers, such as “Sweet Dreams” by the Eurythmics and “Jump” by Van Halen.

3 The first synthesizer was invented in the 1800s and used rotating disks to create sound. It wasn't until the 1960s that electronic synthesizers, as we know them today, were invented.

4 Synthesizers can come in all shapes and sizes, from small handheld devices to giant keyboards that take up an entire room.



5 Synthesizers have been used to create sound effects in movies and TV shows, such as the iconic sound of the TARDIS in Doctor Who.

Safety first

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

Handling a screwdriver is not recommended for children under the age of 7!

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

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

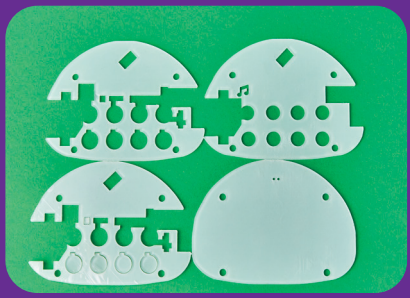
Closely follow all the instructions you received in this kit and those found on our online pages so that no one gets hurt.

If you have never used a 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.

BUTTONS BUILD GUIDE

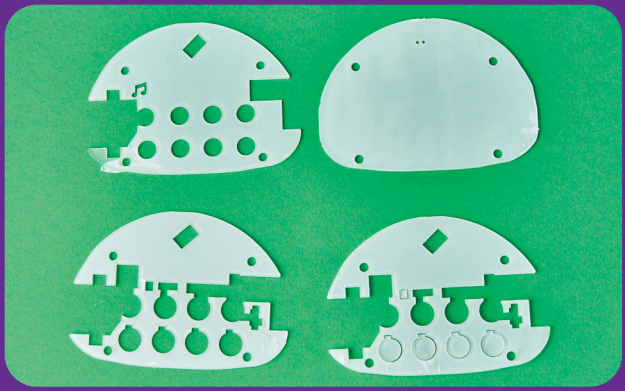
To get a bunch of smaller casings from the kit, you'll need to break one large acrylic piece.



But please, **be super careful** when doing this to make sure you don't damage the parts you need.

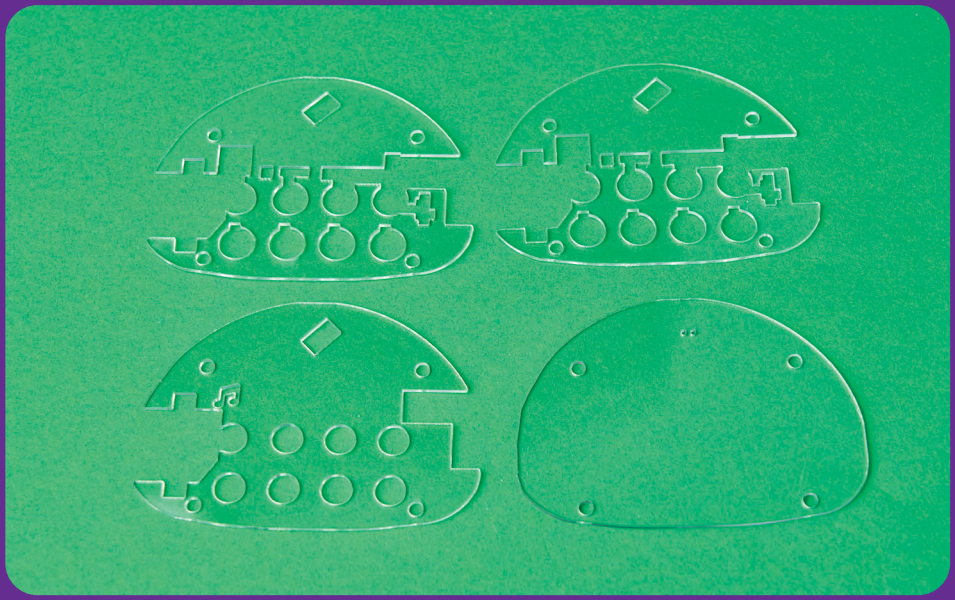
After breaking it, you'll end up with **four separate pieces** of acrylic casings. If you find there's any excess acrylic in the holes of the casings, just gently push it out.

This is what your casings should look like:



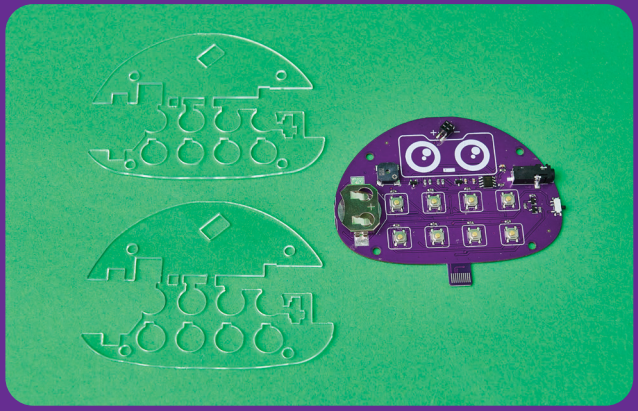
Remove the protective foil from both sides of the casings now.

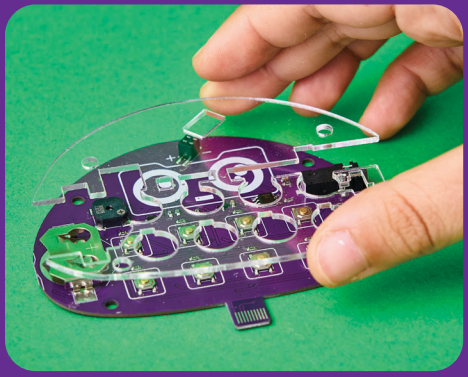
Your casings should be all nice and transparent now.

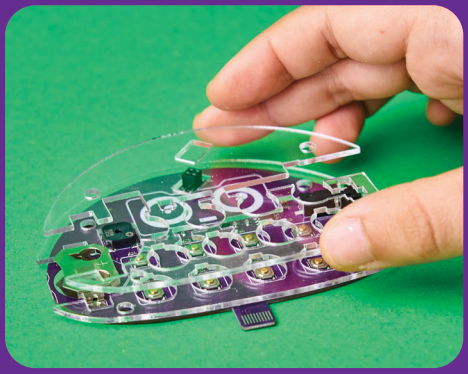


Now, let's dive into the exciting assembly part!

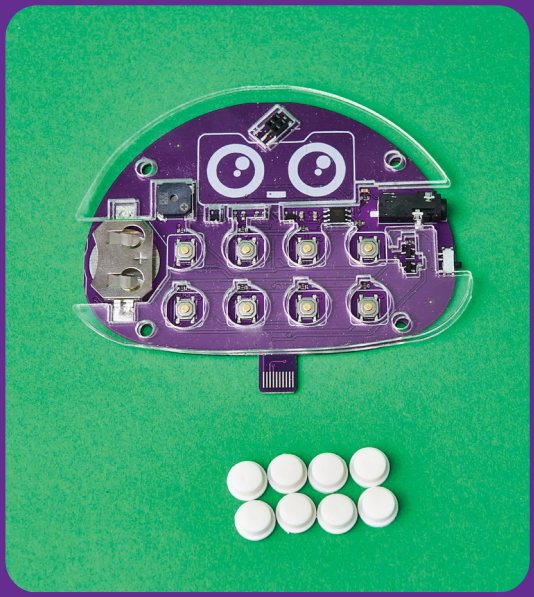
Start by grabbing two of the identical-looking **casings** from the photo below and carefully place them onto the **PCB**.





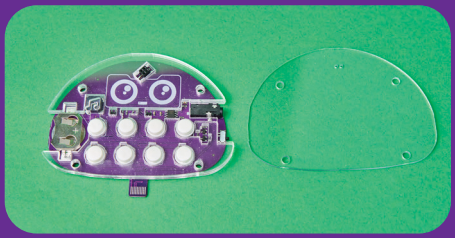


Now, let's grab all the white pushbuttons and gently slide them into the holes in the casings.

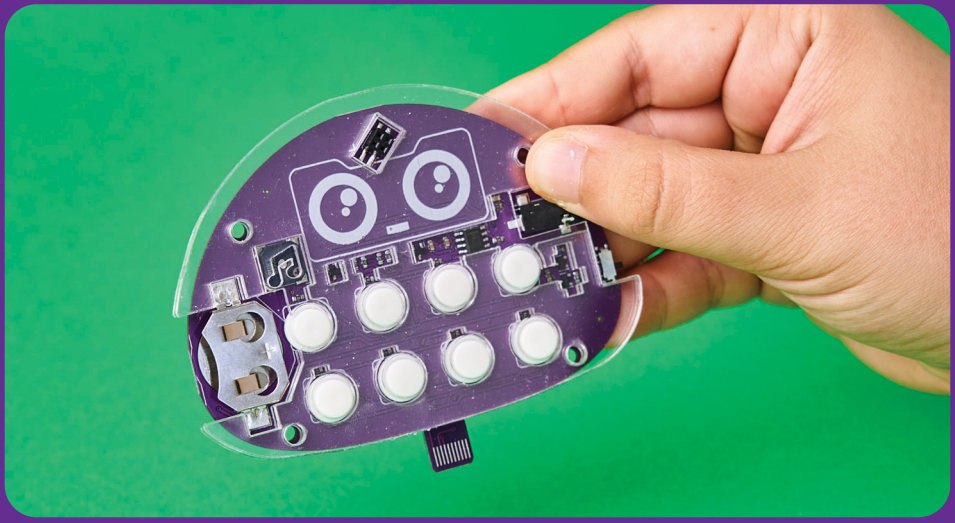


To make sure they stay in place and don't fall off, we'll need to fasten them securely.

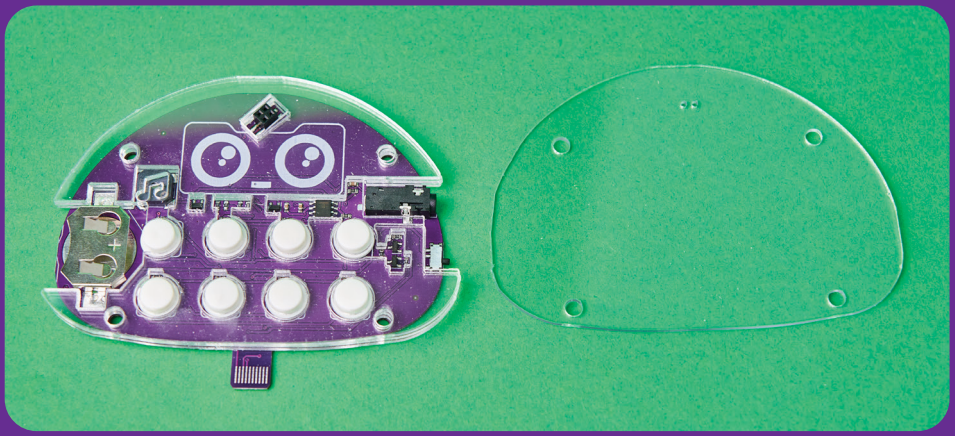
Here's the trick: Take this specific casing and place it on the top front part. This way, you're locking those pushbuttons in position.

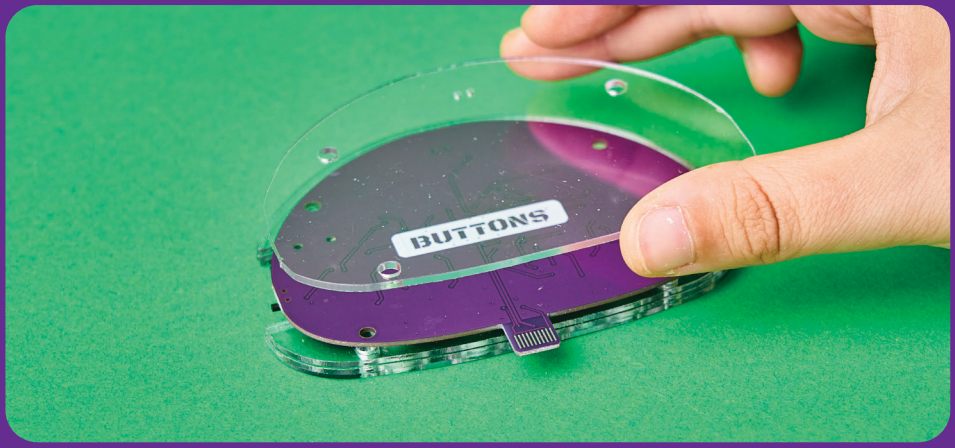


The front side should look just like this.

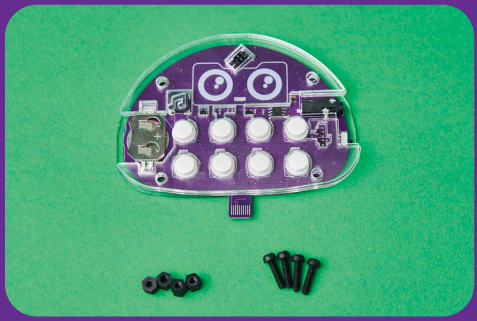


Now, let's move on to the next step – getting the casings onto the back side.



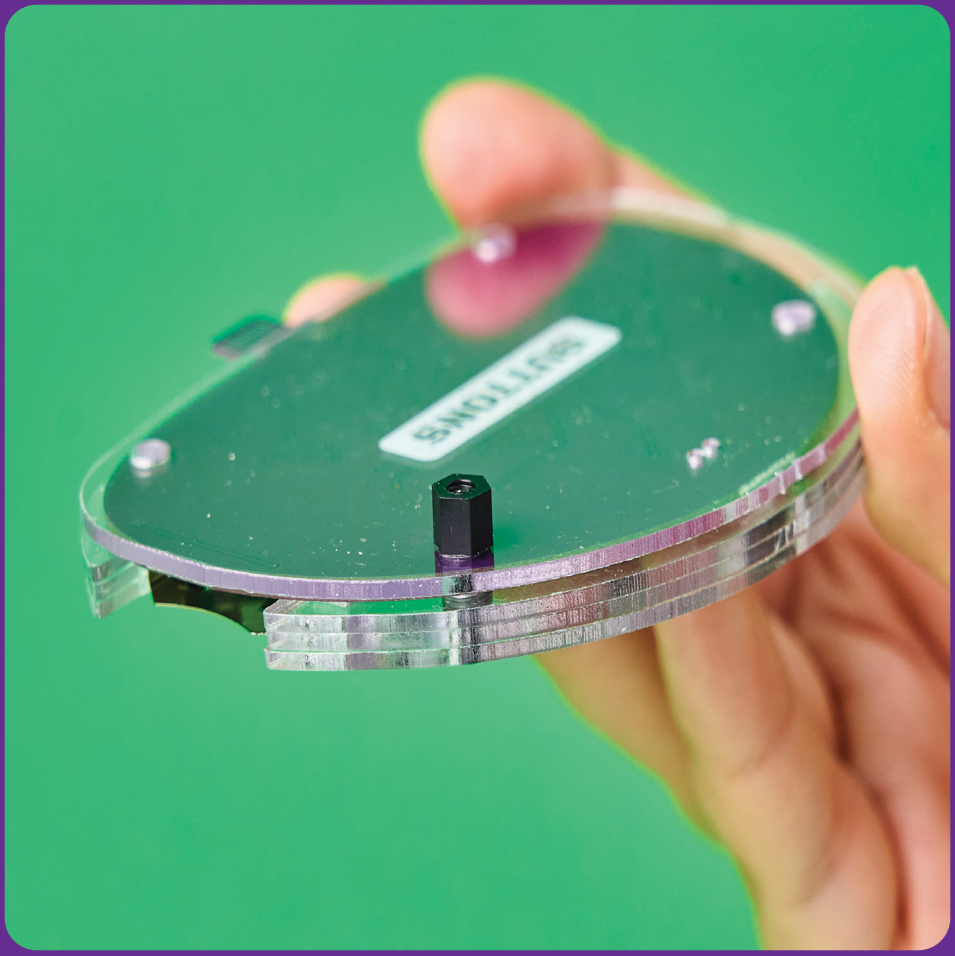


We need to secure the casings in place so they don't fall off.

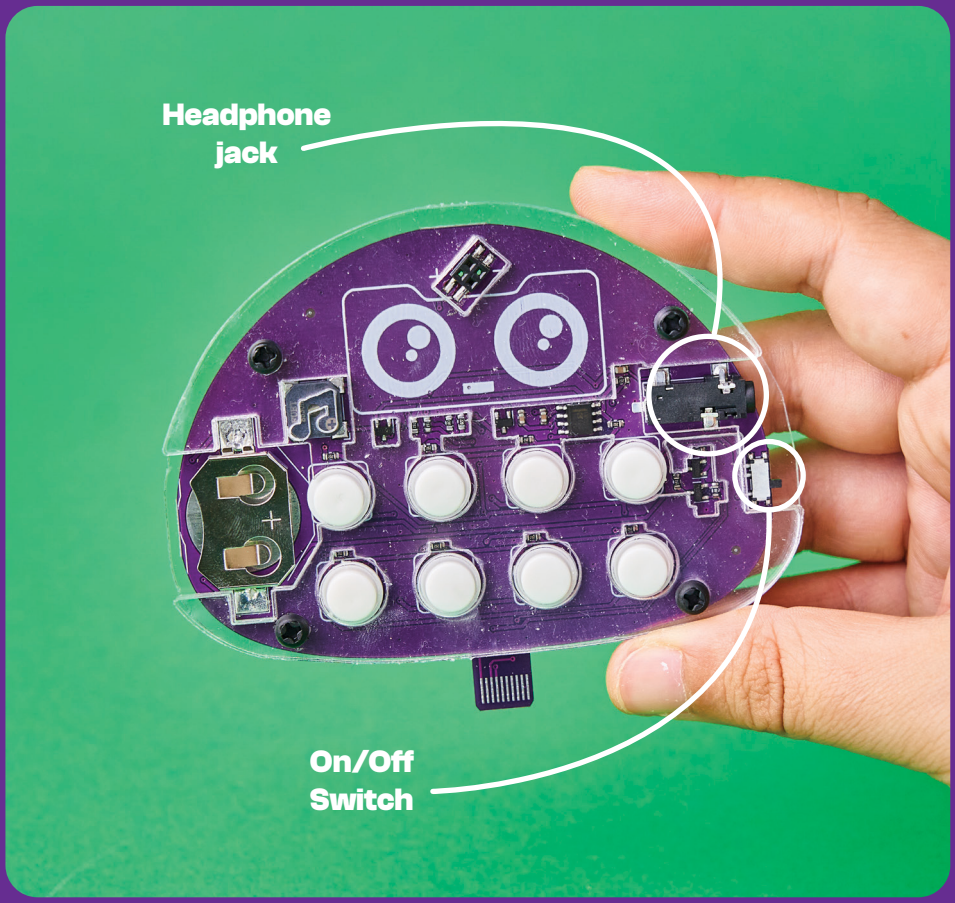


To do that, grab the bolts and attach them from the front, and then slide the standoffs onto the back.

Now, fasten the standoff using your fingers.

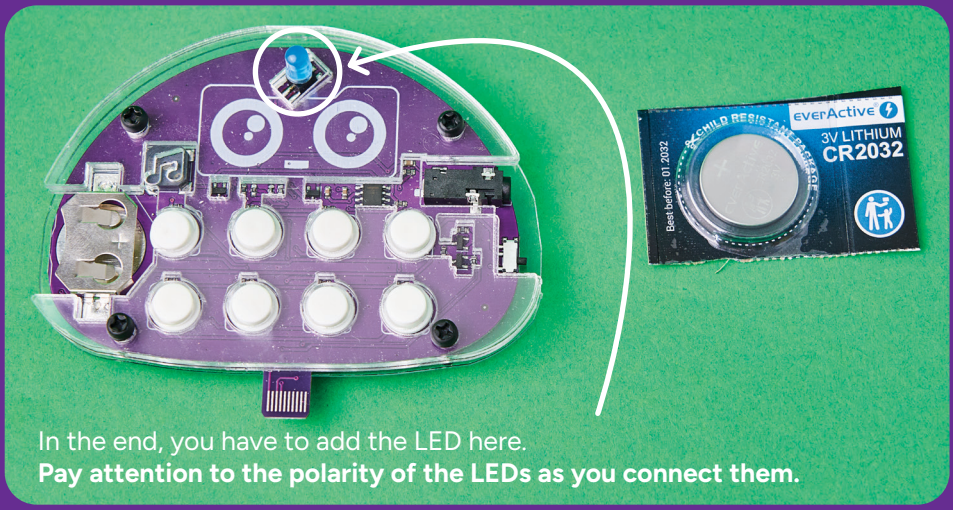

SMOLLGS

Once you've attached all the bolts and standoffs, your Buttons should look like this:



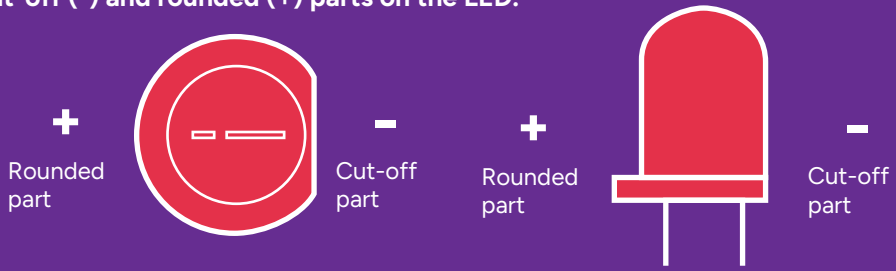

BUTTONS

Grab the coin battery and carefully place it on the backside **(make sure the + symbol on the battery matches the + sign on the board - front and up)**.



In the end, you have to add the LED here.
Pay attention to the polarity of the LEDs as you connect them.

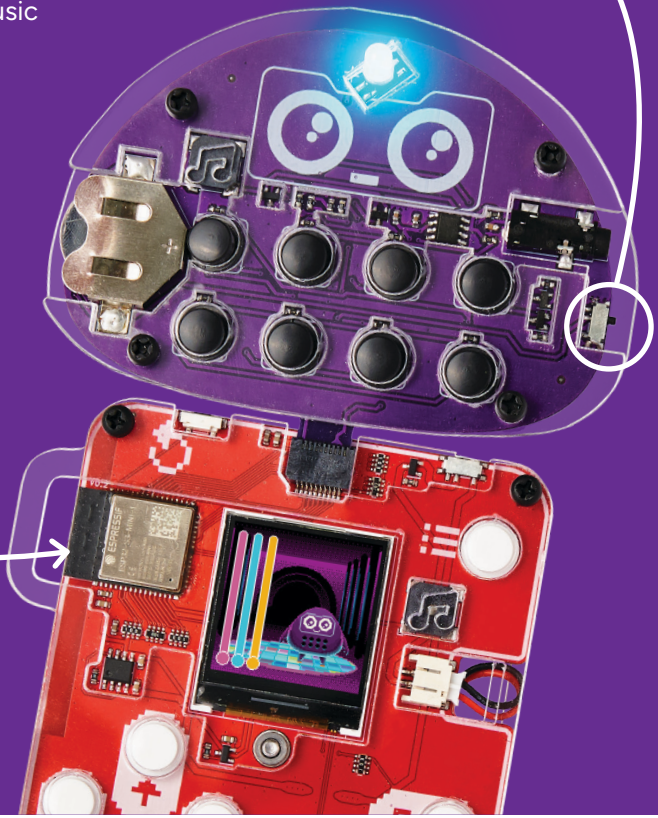
Plus and minus signs on the LED are marked with cut-off (-) and rounded (+) parts on the LED.



Turn on the Buttons by using the On/Off switch on the right. After that, you can have some fun experimenting with different sounds by **pressing the buttons in the center**. Each button produces a unique sound, and when you press them, the LED will light up. Also on the right side is a headphone jack, which allows you to listen to music without being disturbed.

We hope you enjoyed putting Buttons together and learned something new.

And hey, here's a bonus: Connect it to the CircuitMess BIT and unlock a new game!



*BIT is sold separately

Thank you for purchasing CircuitMess Wacky Robots Educational kits

For more information and detailed instructions on assembling and using your device, visit our official website: circuitmess.com/resources/guides

Important safety information for CircuitMess Wacky Robots

Read all safety information before using the device.

WARNING: Failure to follow these safety instructions could result in fire, electric shock, injury, and damage to your device or other objects. Read all safety information before assembling and using this device.

This product is a do–it–yourself device, and for it to work properly, you must assemble it according to the instructions you'll find on our website.

If you are a minor, assemble it only under an adult's supervision to avoid potential risks.

CircuitMess Wacky Robots kit contains sensitive electronic components. CircuitMess Wacky Robots or its components may be damaged if dropped, burned, punctured, crushed, or in contact with liquid. If you suspect that any part of your CircuitMess Wacky Robots kit (especially the batteries) is damaged, stop using the device. Using a damaged device may cause injury.

Use only authorized accessories compatible with your device and/or the supplied tools.

The device's operating temperature ranges from 0 ° C ~ 40 ° C.

Using this device in conditions outside this temperature range may damage the device.

Please turn off CircuitMess Wacky Robots after use and store it in a safe and dry location.

The included battery must be recycled appropriately and/or disposed of separately from household waste.

Improper handling of batteries can cause a fire or explosion. Dispose of or recycle

your device, battery, and accessories according to local regulations.

The included battery is NOT rechargeable.

- Do not short–circuit the battery
- Improper use of the battery can cause overheating, burns, or other injuries.
- Do not leave the battery directly exposed to intense sunlight.
- Do not use the device or the battery in high–temperature conditions. Overheating may cause an explosion.
- Do not disassemble or damage the battery to avoid battery leakage, overheating, or explosion.

- In the case of deformation, stop using the battery immediately and dispose of it properly.

If you are not sure whether your device or the included battery is safe to use, turn off the device, put it in a safe place, and contact our customer support via email at contact@circuitmess.com.

Keep the device dry.

Do not attempt to repair the device by yourself.

If any part of the device does not work correctly, contact our customer support (contact@circuitmess.com) or take your device to a certified repair shop.

Connect other devices according to their operating instructions. Do not connect incompatible devices to this device.

Precautions

During prolonged use, Wacky Robots may rarely overheat.

Keep CircuitMess Wacky Robots in a ventilated room during the use and assembly. Pay special attention to this if you suffer from a physical condition that affects your ability to detect heat on your body.

Assembling or using CircuitMess Wacky Robots in an area with a potentially explosive atmosphere, such as areas where the air contains high levels of flammable chemicals, vapors, or particles (such as dust or metal powder), can be dangerous.

Exposure of CircuitMess Wacky Robots to environments with high concentrations of industrial chemicals, including liquefied gases that evaporate, such as helium, can damage the functionality of CircuitMess Wacky Robots.

Do not use CircuitMess Wacky Robots in hospital operating rooms or intensive care units.

Contact your doctor or our customer support (contact@circuitmess.com) to determine if the device's operation may compromise the work of medical devices.

To avoid possible interference with a pacemaker, maintain a minimum distance of 15 cm between the CircuitMess Wacky Robots and the pacemaker. To achieve this, do not carry the included device in your pockets.

Do not use CircuitMess Wacky Robots near hearing aids or similar medical aids and equipment to avoid interference with medical equipment.

Check aircraft safety regulations and turn off CircuitMess Wacky Robots on the aircraft if necessary.

Do not use CircuitMess Wacky Robots while driving.

To avoid lightning strikes, do not use CircuitMess Wacky Robots outdoors during storms.

Do not use the CircuitMess Wacky Robots in high-humidity environments

such as bathrooms. Failure to do so may result in electric shock, injury, fire, and damage to the product, electronic components, power adapter, or other parts of this electronic educational kit.

Follow all the rules that limit the use of portable electronic devices in some situations and conditions.

The individual parts and components in the CircuitMess Wacky Robots can pose a choking risk to children under 36 months. Keep all components, tools, and parts of this product away from small children before and after assembling the device.

Additional Recommendations and Precautions for Parents, Guardians, and Teachers Buying CircuitMess Wacky Robots for Children

1. Carefully follow the instructions for adequately assembling CircuitMess Wacky Robots. Keep these and all other instructions that came with the products in a safe place.

2. Supervise your child while assembling and using the CircuitMess Wacky Robots. Your responsibility is to ensure that the child uses the CircuitMess Wacky Robots correctly and that the CircuitMess Wacky Robots are suitable for the child's age and abilities.

3. Check from time to time if CircuitMess Wacky Robots are damaged or worn out in any way to prevent possible injuries and risks to the child's health and safety. If CircuitMess Wacky Robots is damaged, remove it immediately.

4. Remove any unnecessary packaging, but keep the instructions. Take care that children do not play with any plastic packaging as there are suffocation risks.

5. Teach children to always store CircuitMess Wacky Robots and other parts of the CircuitMess Wacky Robots educational kit appropriately to prevent accidents. Do not leave CircuitMess Wacky Robots on stairs or on the floor in your home or classroom where someone can step on them.

6. Always report a product security issue to our customer support (contact@circuitmess.com)

Declaration of Conformity

CircuitMess d.o.o. declares that these DIY educational kits CircuitMess Wacky Robots model complies with the essential requirements and all other relevant provisions of Directive 2014/53 / EU. The full text of the EU declaration of conformity is available at the following Internet address: circuitmess.com/certification.

Legal Information

These devices can be used in all EU Member States. Check all the national and local regulations about using the device. These devices may be restricted for use, depending on local laws.

Manufacturer:

CircuitMess d.o.o.

Ventilatorska cesta 24,

10250 Lučko,
Zagreb,
Croatia
OIB: 50943449035

Proper disposal of this product

WEEE markings on the product indicate that this product may not be disposed of with the rest of your household waste in the EU. To prevent possible damage to the environment or human health from uncontrolled waste disposal, recycle the product responsibly. Recycling promotes the sustainable reuse of resources. For more information on the disposal of electrical and electronic equipment, don't hesitate to contact your local household waste disposal service, the store where you purchased the kit, or our customer support (contact@circuitmess.com).

IMPORTANT! Warranty conditions:

The warranty is valid only if the original invoice is attached to the product as proof of purchase during the complaint. If the customer sends the product for repair for any reason not covered by the warranty, the customer may be charged for inspection and testing and delivery costs.

WARRANTY STATEMENT

CircuitMess d.o.o., with its registered office in Zagreb, Croatia, Ventilatorska cesta 24, guarantees the quality and proper functionality of the components that come in the CircuitMess Wacky Robots DIY educational kits for a duration of 24 months from the date of purchase.

If the assembled device does not work correctly due to defects in supplied parts or electronic components supplied in the CircuitMess Wacky Robots DIY educational kits, CircuitMess d.o.o. will repair the product or send an equivalent replacement product at their own expense.

In case you are experiencing assembly or functionality difficulties with your device, please contact us via email (contact@circuitmess.com).

Please include a detailed description of the problem.

If you are sending the product to a repair shop, it is recommended to deliver the product in the original packaging to protect it from potential damage during transportation.

WARRANTY CONDITIONS

The warranty period begins on the day of sale indicated on the invoice.

The warranty is valid upon presentation of the original invoice.

If the defect is not remedied within a reasonable period after receiving the product for repair, CircuitMess d.o.o. will replace it with a new product.

The repair shop does not take responsibility

for storing and/or losing personal data while repairing the device.

WARRANTY DOES NOT COVER

Upgrades, alterations, modifications to hardware and/or software without the written consent of CircuitMess d.o.o.

Malfunctions due to improper handling, faults due to wear of the device and/or its parts (in you need help with assembly or if you have difficulty using the device after assembling it, please contact us at contact@circuitmess.com).

Defects caused by external particles (including, but not limited to: staples, waste, dust, food) and external factors (including, but not limited to: moisture, water, thermal damage).

Mechanical damage and/or failures caused by mechanical damage.

Use of the product for a purpose for which it is not intended.

Requirements for the appearance, technical functionalities, and/or capabilities of the product outside the manufacturer's specifications and/or standards.

Damages to personal data, other tangible and/or intangible assets of the buyer and/or third parties, indirect damages, lost profits caused by the use of the product, and/or its failure.

Repairs in an unauthorized repair shop and/or installation of non–original spare parts.

Damage caused during transportation caused by improper packaging.

The rights under this warranty are the exclusive and final rights of the customer unless otherwise provided by national law.

CircuitMess d.o.o. as the warranty provider and/or its authorized partners will not be liable for any defect, damage, loss, direct or indirect cost, or connection with the delivered products outside the warranty conditions written here.

This warranty does not affect other rights of the customer belonging to him on other legal grounds.

WARRANTY SHEET

Product name:	CircuitMess Wacky Robots do-it-yourself educational solder kit
Warranty on components and parts contained in this set is:	24 months
Date of purchase:	
Seller and point of sale stamp:	
Invoice number:	

Information on interventions during warranty period is entered by a repair shop technician at an authorized repair shop.

Received on	Issued on	Fault description	Warranty extension

Manufacturer:

CircuitMess d.o.o.
Ventilatorska cesta 24,
10250 Lučko,
Zagreb,
Croatia
Country of origin: Croatia
www.circuitmess.com

Authorized repair shop:

CircuitMess d.o.o.
Ventilatorska cesta 24,
10250 Lučko,
Zagreb,
Croatia
Country of origin: Croatia
www.circuitmess.com

CircuitMess

WARNING:
Not for children under 3 years.

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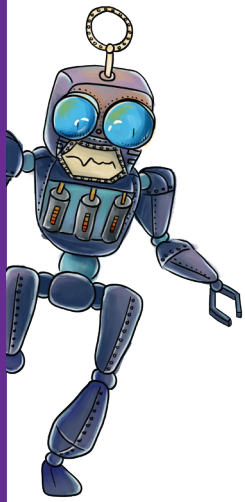

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