



# AdaBox 017

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<https://learn.adafruit.com/adabox017>

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# Introduction

## Hi there!

[If you're looking to subscribe to AdaBox, click here! \(https://adafru.it/tNC\)](https://adafru.it/tNC)

If you're here, it's because you were given the gift of electronics with an AdaBox! Perhaps you are a beginner who is getting started with your AdaBox. Or maybe you just want to relive what it's like being a beginner at electronics again. But most of all, you want to learn how to build and make creative, awesome stuff with electronics, displays, graphics, and coding! (If, rather than learn all that, you'd like to look at [pictures of cats instead, please check https://www.adafruit.com/galleries/cats-of-engineering \(https://adafru.it/oAd\)](https://www.adafruit.com/galleries/cats-of-engineering))

And, you're in luck: there's never been a better time. Seriously. We're not just saying that. It's wild how great a time this is for you to learn electronics, E-Ink displays, coding, graphics, and Internet-connected WiFi projects using a super-sharp, four-color E-Ink display!

Gone are the days where you need thousands of dollars of equipment and a physics/math background. Nowadays, if you want to learn to work with electronics and code microcontrollers, you can jump right in for \$100 or less and any sort of computer. And we're talking about learning a lot of electronics, graphics, coding, and wireless action - from the basics of setting up a microcontroller, to customizing your graphics on an E-Ink display, and doing it wirelessly! Soon you'll be turning your refrigerator door into your own IoT information system!

## Who is this for?

Anyone who is interested in learning how to program and build interactive projects, and with access to a modern web browser. That's pretty much the minimum. Remember, this guide is specifically for people who have purchased or received an AdaBox subscription!

**You don't need to know a lot of physics or math**, and just like an Art Degree isn't required for making art and being creative, **you don't need to have a computer science or mechanical engineering degree**. It helps if you're comfortable using computers but that's a skill most people pick up through life.

If you know how to program already - great! If not, don't worry, we'll teach you enough to be dangerous.

## Who isn't this for?

While you can follow along without an AdaBox, it will not make as much sense unless you have all of the components and more which either came as a gift or purchased yourself - remember, the goal is helping beginners!

This guide is also not for snails. Snails are interesting creatures, but [they're probably chilling out in their shells instead of coding](https://adafru.it/Pdn) (<https://adafru.it/Pdn>).

If you're an expert, please visit our thousands of other tutorials and jump right in at [learn.adafruit.com](https://adafruit.com) (<https://adafru.it/dlu>)

## Who are you?

Great question. This is me:

I'm Ladyada, and I love to teach people how to build stuff and how they can be creative with technology.

So, are you ready?

Let's do this thing!

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# Unboxing Adabox 017



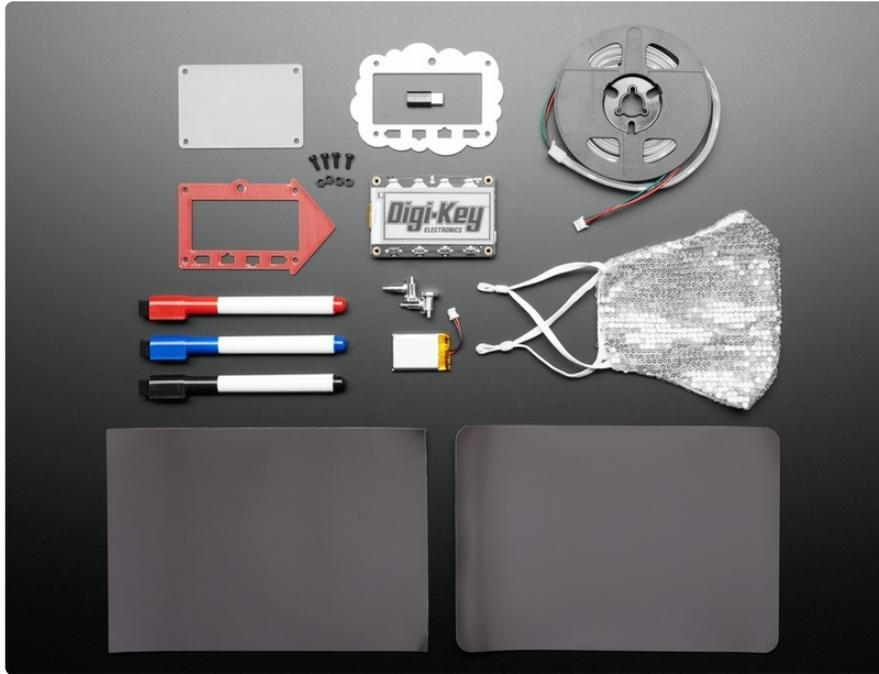
**Who knows what the future may hold.** The best way to predict the future, is to help invent it. This time last year, would you believe any predictions if you knew what was ahead? Our fates may be up to chance, or maybe they are pre-destined - but we know what you'll be doing for the next few weeks at least... Learning and exploring electronic paper with the **MagTag**, a battery-powered E-Ink display with built-in WiFi.

We're all going to be spending a lot of time in the kitchen this holiday - so why not code up something and attach it to your fridge? **Gaze deeply into this ADABOX** and visualize your future projects - a daily horoscope, weather forecaster, inspirational quotes, a kitchen timer or clock? All is possible with our easy CircuitPython projects.

A huge thank you to **Digi-Key** for going above-and-beyond to help support Adafruit over the last few months. Digi-Key's support made this box possible, and we are so excited to see what you will build!

The future is yours, if you make it.

## AdaBox 017 Contents



## Downloadable Content Sheet

A few folks in the first day of shipments may not have received a paper contents insert sheet. If you have a printer, you can print your own from this PDF - it's a grayscale image so any printer will be able to print it out for you!

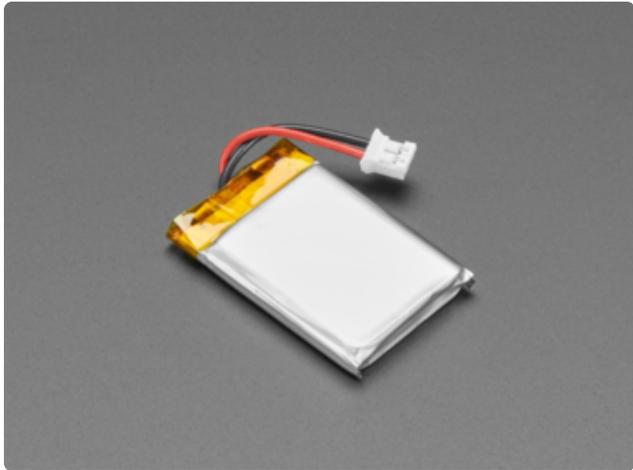
[adabox\\_content\\_sheet\\_017.pdf](#)

<https://adafru.it/Pee>



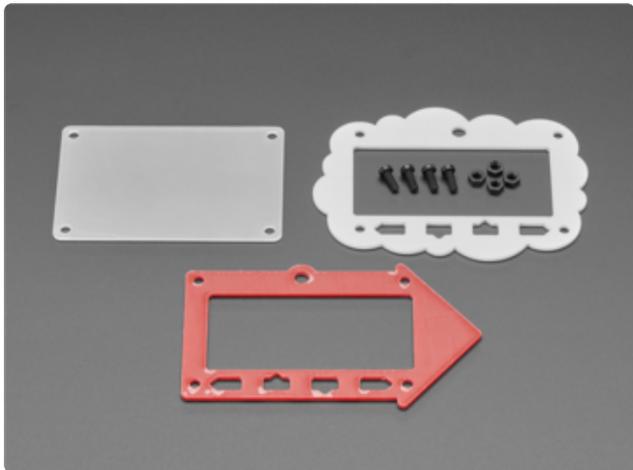
## Adafruit MagTag

MagTag combines the new ESP32-S2 wireless module and a 2.9" grayscale E-Ink display to make a low-power IoT display that can show data on its screen even when power is removed!



## Lithium Polymer battery

Plug into the MagTag once you're happy with your project so it can run anywhere. It will auto-charge when you connect the board to USB.



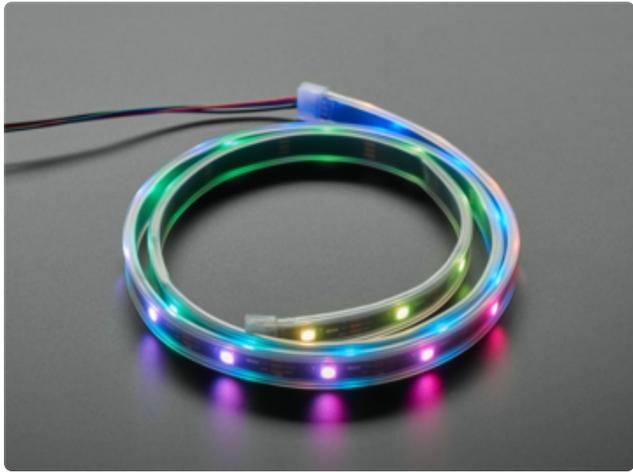
## Acrylic Faceplate Kit

The clear back-plate protects the battery. The front plate can be a fluffy, friendly, cloud or a jaunty crimson arrow. Includes some M3 screws to attach the acrylic pieces.



## Magnet Feet

Screw these into the back of the MagTag to make it stick to ferrous things ... like a shelf, desk or refrigerator.



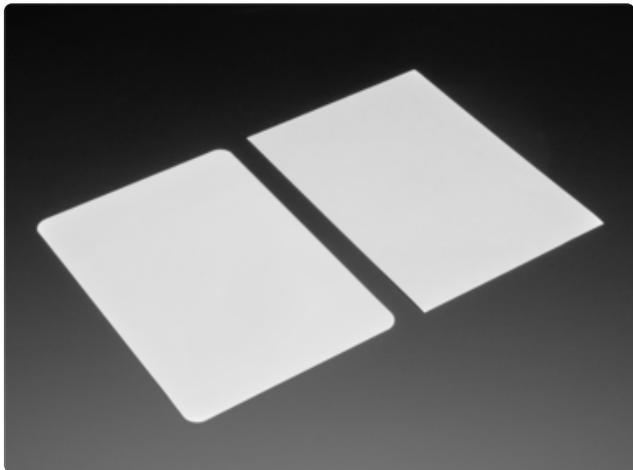
## NeoPixel Strip

What's a holiday without lights? This 1 meter long NeoPixel strip plugs right into the MagTag and has 30 RGB LEDs.



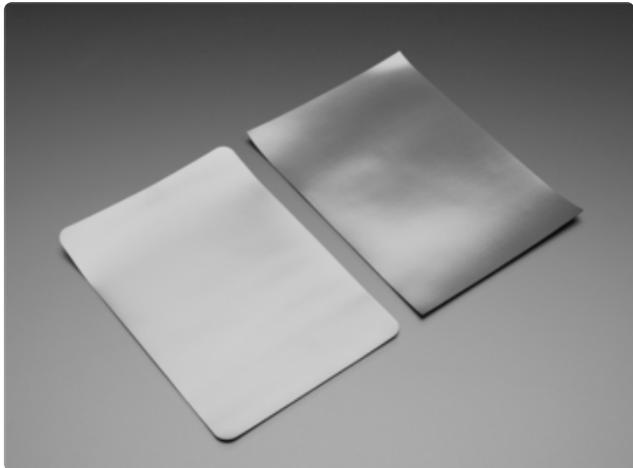
## Magnetic Whiteboard + Markers

Use this as an every-day white board or as a background for your MagTag.



## Magnetic Sticker Sheet

This is thin and flexible magnetic sheet that can easily be cut with scissors. You can use it to turn any non-ferrous surface magnetic or you can make custom magnetic stickers by attaching it to the back of a photo or printout.





## USB C Adapter

If you haven't caught up to USB C standards yet, this adapter will convert a Micro B cable to Type C.



## Sparkly Face Mask

Shimmer and shine as you count down to the new year.

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## Adafruit MagTag

[Adafruit MagTag \(https://adafru.it/P9D\)](https://adafru.it/P9D)

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## MagTag Slideshow

[MagTag Slideshow \(https://adafru.it/P9F\)](https://adafru.it/P9F)

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## Weekly Showtimes Event Notifier

[Weekly Showtimes Event Notifier \(https://adafru.it/Pga\)](https://adafru.it/Pga)

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## MagTag Showerthoughts and Quotes Viewer

[MagTag Showerthoughts and Quotes Viewer \(https://adafru.it/Pa0\)](https://adafru.it/Pa0)

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## MagTag COVID Tracking Display

[MagTag COVID Tracking Display \(https://adafru.it/Pdm\)](https://adafru.it/Pdm)

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## MagTag Progress Display

[MagTag Progress Display \(https://adafru.it/Pa1\)](https://adafru.it/Pa1)

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## Daily Christmas Countdown

[Daily Christmas Countdown \(https://adafru.it/Pdl\)](https://adafru.it/Pdl)

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## MagTag Holiday Lights

[MagTag Holiday Lights \(https://adafru.it/Pa4\)](https://adafru.it/Pa4)

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## MagTag Cat Fed Clock

[MagTag Cat Fed Clock \(https://adafru.it/Pf3\)](https://adafru.it/Pf3)

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## SpaceX Next Launch Display with Adafruit MagTag

[SpaceX Next Launch Display with Adafruit MagTag \(https://adafru.it/P9E\)](https://adafru.it/P9E)

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## Spreadsheets on MagTags

[Spreadsheets on MagTags \(https://adafru.it/Pf4\)](https://adafru.it/Pf4)

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## MagTag Tides Viewer

[MagTag Tides Viewer \(https://adafru.it/PcN\)](https://adafru.it/PcN)

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## NextBus Transit Predictions

[NextBus Transit Predictions \(https://adafru.it/Pa2\)](https://adafru.it/Pa2)

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## Google Graveyard Viewer

[Google Graveyard Viewer \(https://adafru.it/Pgb\)](https://adafru.it/Pgb)

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## Produce Reminder for MagTag

[Produce Reminder for MagTag \(https://adafru.it/Pdk\)](https://adafru.it/Pdk)

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## Creating MagTag Projects with CircuitPython

[Creating MagTag Projects with CircuitPython \(https://adafru.it/Pgc\)](https://adafru.it/Pgc)

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## MagTag Tarot

[MagTag Tarot \(https://adafru.it/QaM\)](https://adafru.it/QaM)

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## 3D Printed MagTag Stand

[3D Printed MagTag Stand \(https://adafru.it/Pa3\)](https://adafru.it/Pa3)

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## Firmware

Here's the code and assets for the horoscope firmware that shipped on the MagTag in AdaBox 017.

Note, this code was designed for CircuitPython 6 and will probably require modification to work on newer versions of CircuitPython.

**ab017\_firmware.zip**

<https://adafru.it/Utc>