adafruit learning system

AdaBox 016

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Introduction

Hi there!

If you're looking to subscribe to AdaBox, click here! (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))

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, LED displays, coding, graphics, and Internet-connected WiFi projects using images with LOTS of LEDs!

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 a beautiful LED matrix display, and doing it wirelessly! Soon you'll be turning your wall into your very own personalized Times Square!

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 goats. Goats are awesome, but they'd rather be doing Yoga (https://adafru.it/NYa).

If you're an expert, please visit our thousands of other tutorials and jump right in at learn.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!

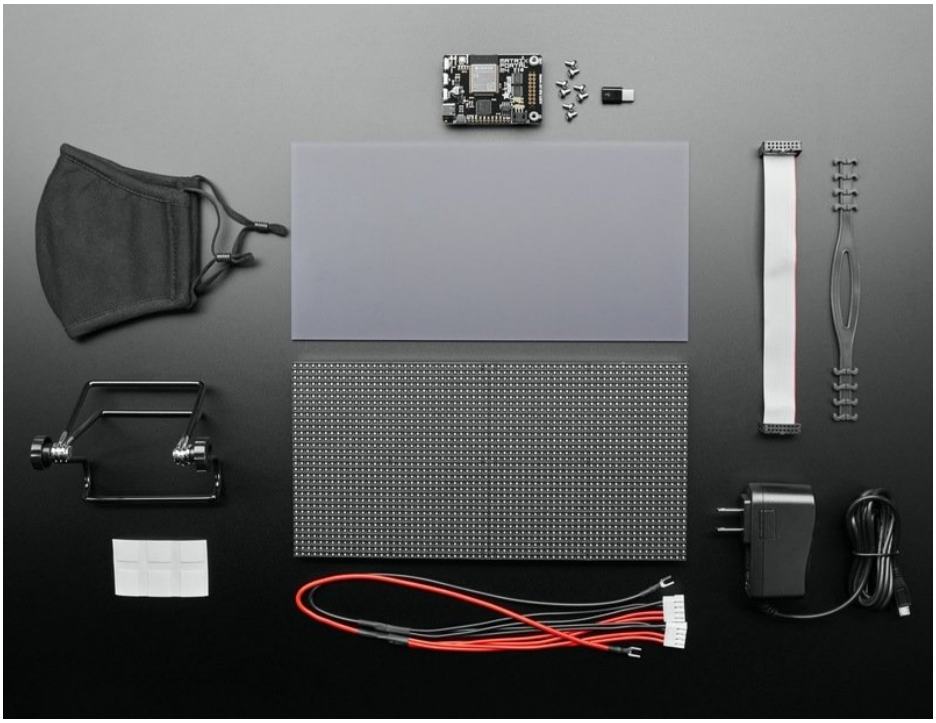
Unboxing Adabox 016

It's just a BLINK to the left, and then a SPARKLE to the the ri-i-i-i-ight... This Halloween we're going to glam it up, and shine brighter than ever! In this ADABOX we'll give you 2000+ rainbow pixels to customize for the ultimate expressive display.

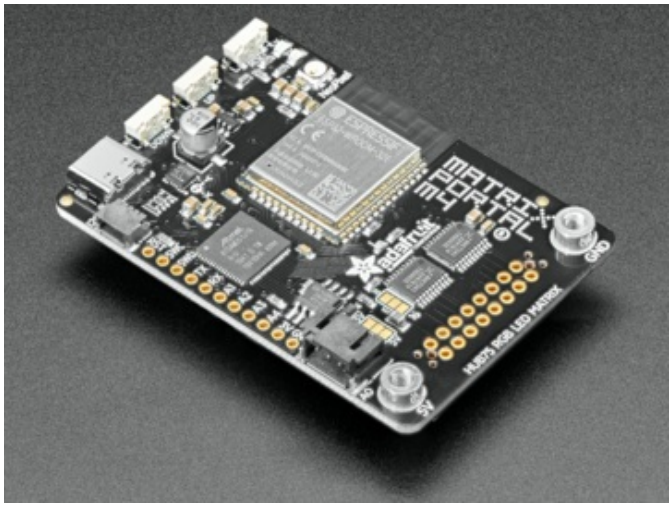
With a bit of a mind flip... make a mesmerizing digital sand box or huge spooky eyes for your windowsill. **Space out on sensation....** playing your favorite animated GIFs or the latest tweets. **Nothing can ever be the same...**once you have a Matrix Portal and a 64x32 RGB Matrix display! This WiFi-connectable display is like a little bit of Times Square brought into your home.

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!

So come up to the ADABOX lab and see what's on the slab. I see you shiver with antici...

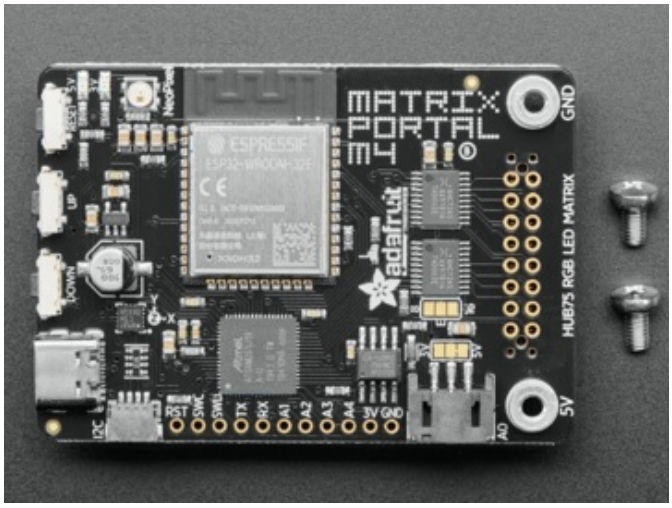


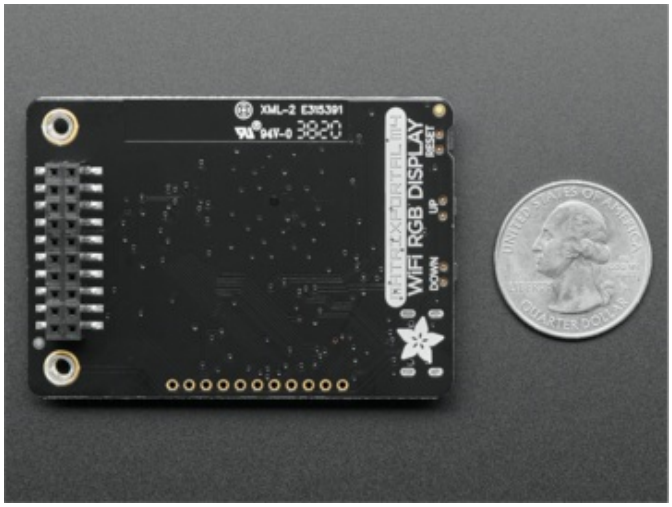
AdaBox 016 Contents

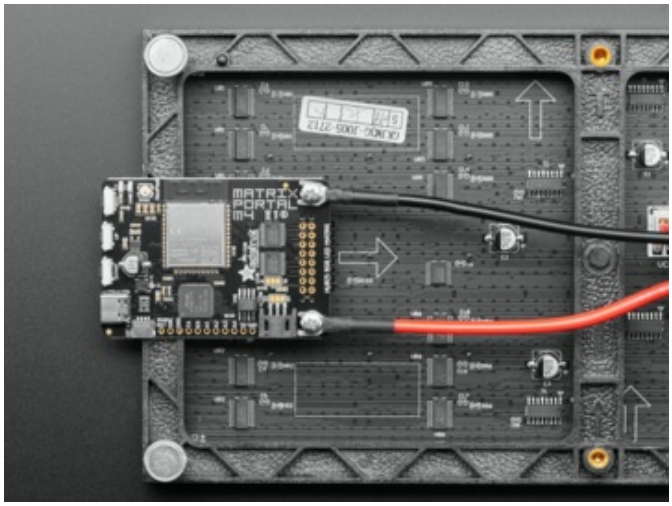


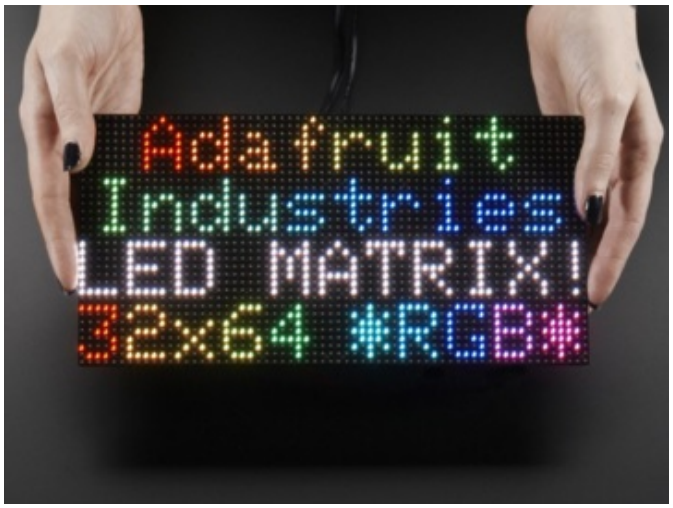
Adafruit Matrix Portal

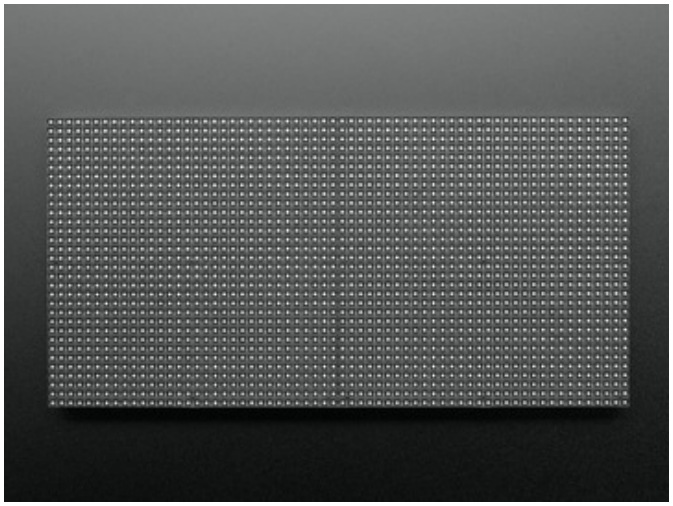
The star of the show! With a powerful SAMD51 processor, it can easily drive an RGB Matrix display while juggling other tasks. Add in an ESP32 WiFi co-processor and you've got full connectivity. Plugs right into the back of any RGB Matrix, and is powered over USB C.

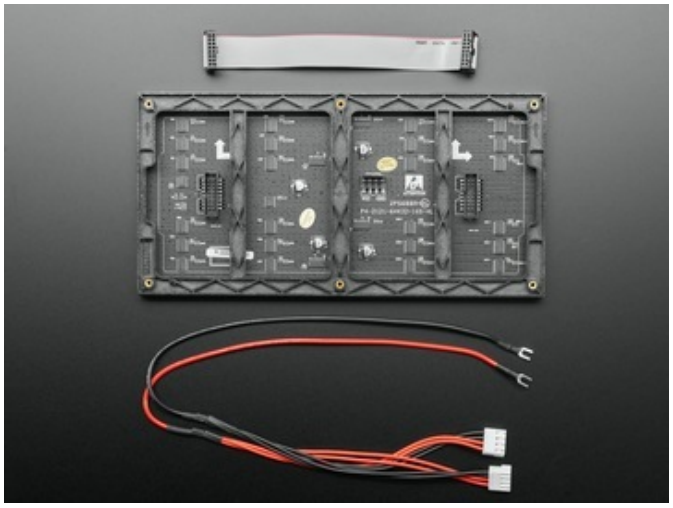

MATRIX
PORTAL
M4
GND
5V
HUB75 RGB LED MATRIX


WiFi RGB DISPLAY


MATRIX
PORTAL
M4

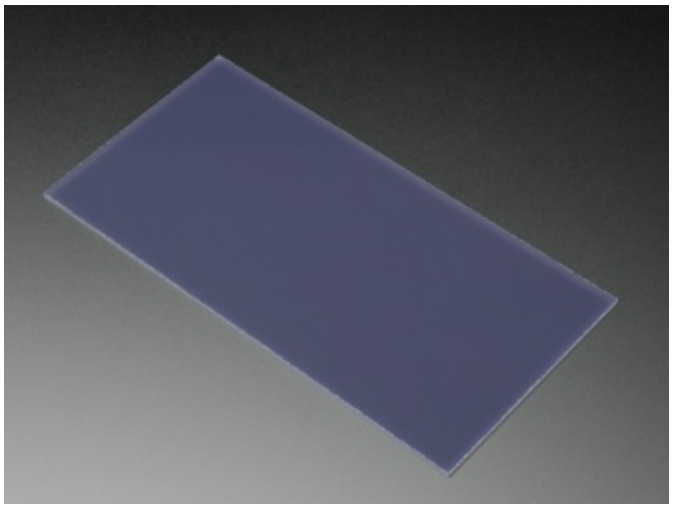






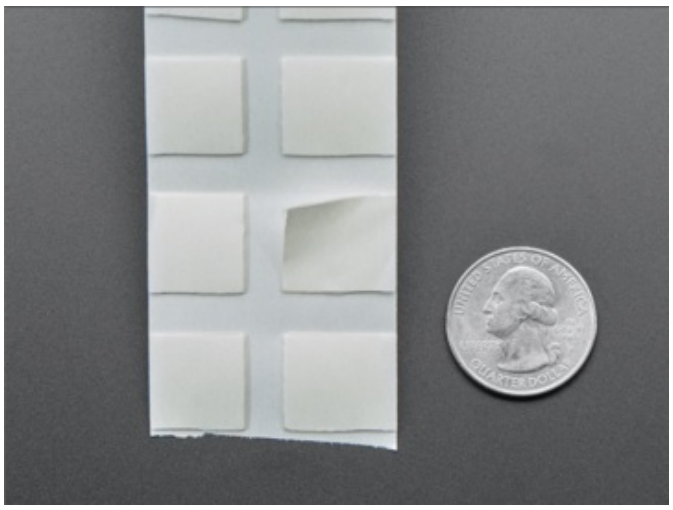
64 x 32 RGB Matrix

Over 2000 colorful LEDs - the most LEDs of any ADABOX! Plug it into the **Matrix Portal** and use our Arduino or CircuitPython libraries to draw and animate.



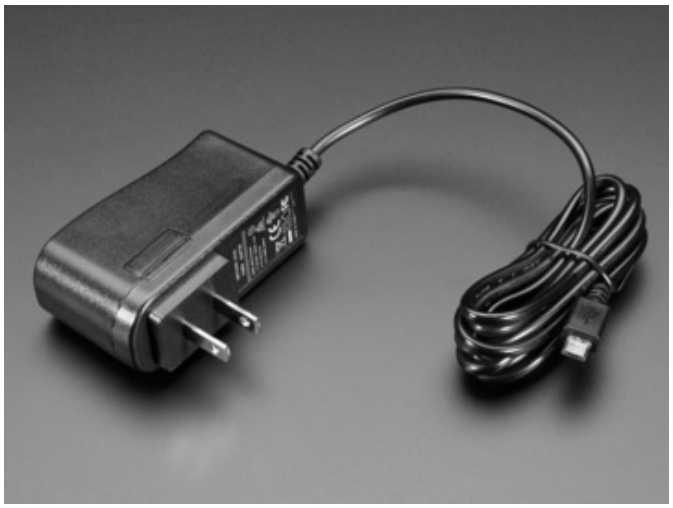
LED Diffusion Acrylic

This black acrylic adds some extra diffusion to your LED Matrix project. This material is made of special cast acrylic that makes it perfect for glowy projects.



Adhesive Squares

This strong and transparent adhesive is perfect for mounting the LED acrylic to the front of your matrix.



5V 2.4A Power Supply + USB C Adapter

Once you've programmed your matrix, you can power it with this supply for a stand-alone display. If your location doesn't use US plugs, use a low-cost plug adapter.

Bent Wire Stand

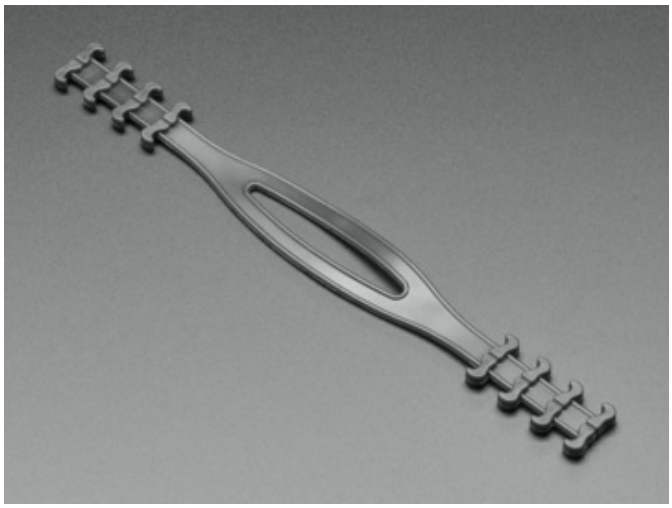
Keep your kit upright while you're working on it with this simple but effective stand.

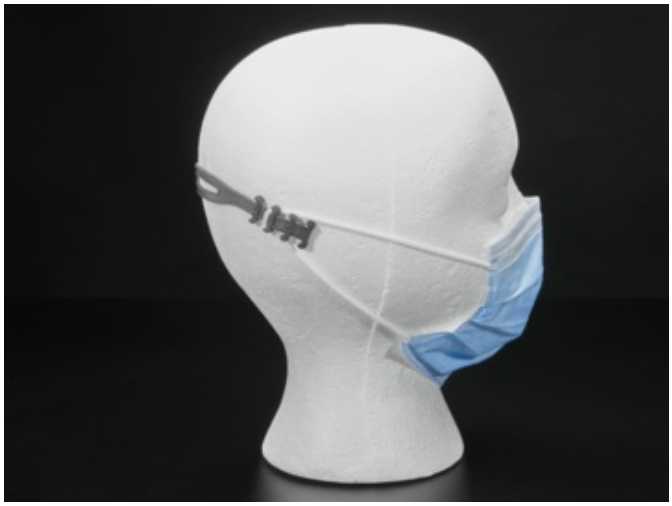
M3 Machine Screws

Use two on the Matrix Portal to attach power cables. The rest can be used if you want to mount the Matrix display using the M3 bosses.

Face Mask

Stay safe, stay covered!





Ear Saver

We love these flexible ear savers, they hook onto the loops of a mask behind your head - keeping your delicate ears from chafing.

Shipping Demo

If you'd like to re-load the shipping Adabox demo, download the UF2 below, then load it onto your matrix portal by double-clicking the Reset button and then dragging the UF2 over onto the **MATRIXBOOT** drive.

https://adafru.it/OcX

https://adafru.it/OcX

Matrix Portal

Matrix Portal (https://adafru.it/NDR)

Matrix Portal Creature Eyes

Matrix Portal Creature Eyes (https://adafru.it/NVc)

Halloween Countdown Display

Halloween Countdown Display (https://adafru.it/NB5)

Tombstone Matrix Portal

Tombstone Matrix Portal (https://adafru.it/Oc7)

Moon Phase Clock

Moon Phase Clock (https://adafru.it/NB7)

Scoreboard

Scoreboard (https://adafru.it/ObX)

Network Connected Clock

Network Connected Clock (https://adafru.it/NA-)

Custom Scrolling Quote Board

Custom Scrolling Quote Board (https://adafru.it/NB2)

YouTube On Air Sign

YouTube On Air Sign (https://adafru.it/MPE)

Matrix Display Handbag

Matrix Display Handbag (https://adafru.it/ObY)

Weather Display

Weather Display (https://adafru.it/NB1)

Bitcoin Value Display

Bitcoin Value Display (https://adafru.it/NB0)

Purple Air AQI Display

Purple Air AQI Display (https://adafru.it/NVd)

Learn Guide Scroller

Learn Guide Scroller (https://adafru.it/OfQ)

IoT Twitter Listener Party Parrot

IoT Twitter Listener Party Parrot (https://adafru.it/NVe)

Pixel Art and Animation Display

Pixel Art and Animation Display (https://adafru.it/NTA)

Animated GIF Player

Animated GIF Player (https://adafru.it/OfR)

Protomatter RGB Matrix Library

Protomatter RGB Matrix Library (https://adafru.it/MNa)

Image Correction for Matrices

Image Correction for Matrices (https://adafru.it/ObZ)

Creating Projects With CircuitPython Matrix Portal Library

3D Printed Matrix Portal Handles

3D Printed Matrix Portal Handles (https://adafru.it/NDg)

Matrix Panels in CircuitPython