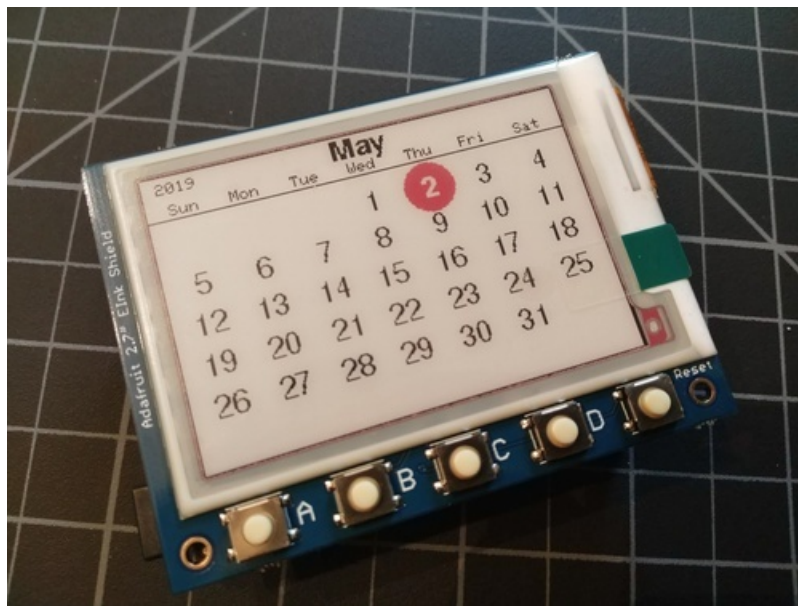


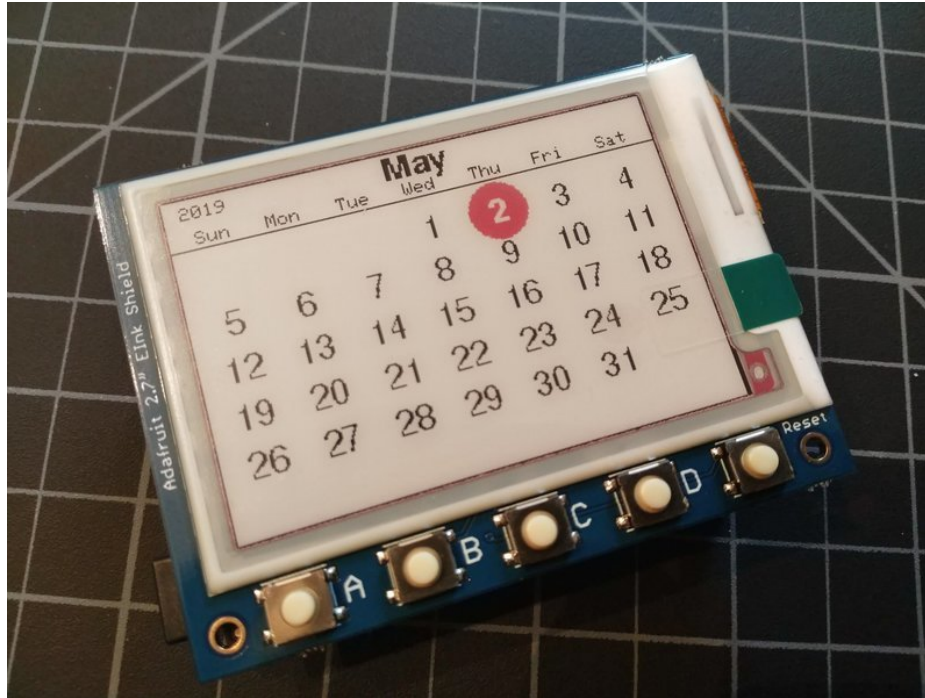
ePaper Calendar Featuring Metro M4 Express Airlift and Tri-Color ePaper Shield

Created by Dan Cogliano



Last updated on 2020-05-18 09:25:58 PM EDT

Overview



Build this calendar display using the Adafruit Metro M4 Express Airlift and the Tri-Color ePaper Shield.

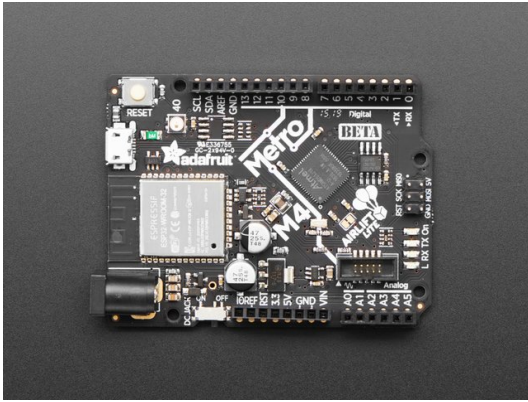
A wonderful thing happened when the Metro M4 Express Airlift was released. It opened Arduino sketches to the Internet, freeing them from the confines of their closed environment. It is now officially a "thing" in a world of the Internet of Things (IoT). For this project, the sketch utilizes the built-in Airlift coprocessor board of the Metro M4 Express Airlift to grab the current date and time from Adafruit.io. No Real Time Clock (RTC) is needed here, since Adafruit.io will happily give us the current date and time, and in our local timezone too.

The Adafruit Tri-Color ePaper Shield used with this project is a 2.7" ePaper shield that displays black, white and red pixels. It easily connects to the Metro with no soldering needed since the headers are already assembled on both the Metro and the ePaper shield. The sketch displays the current month using the date and time pulled from Adafruit.io. The ePaper display keeps its display even when power is removed. Once a monthly calendar is displayed, you could unplug it and the display will continue to show the calendar.

Parts

Building this project requires no soldering and uses just two parts: the Adafruit Metro M4 Express AirLift Lite and the Adafruit 2.7" Tri-Color eInk / ePaper Shield with SRAM. To make this project portable, you could add a [USB battery pack \(https://adafru.it/e2q\)](https://adafru.it/e2q) or the [Adafruit PowerBoost 500 Shield \(https://adafru.it/ELV\)](https://adafru.it/ELV) and a Li-Po battery and insert it between the Metro and the ePaper shield.

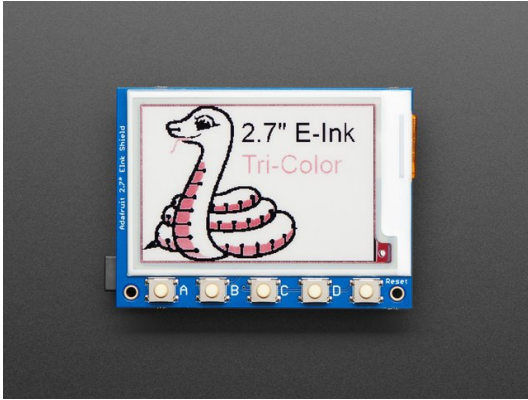
If you are interested in ePaper displays for other projects, check out the entire line of [Adafruit's ePaper displays \(https://adafru.it/ExU\)](https://adafru.it/ExU).



Adafruit Metro M4 Express AirLift (WiFi) - Lite

\$34.95
IN STOCK

Add To Cart



Adafruit 2.7" Tri-Color eInk / ePaper Shield with SRAM

OUT OF STOCK

Out Of Stock



USB cable - USB A to Micro-B

\$2.95
IN STOCK

Add To Cart

Arduino Code

If you don't have it already, you will need the Arduino IDE installed on your computer to upload this sketch to the Metro M4 Express Airlift. [You will find information on installing Arduino in this learning guide \(https://adafru.it/CfF\)](https://adafru.it/CfF).

Installing The Libraries

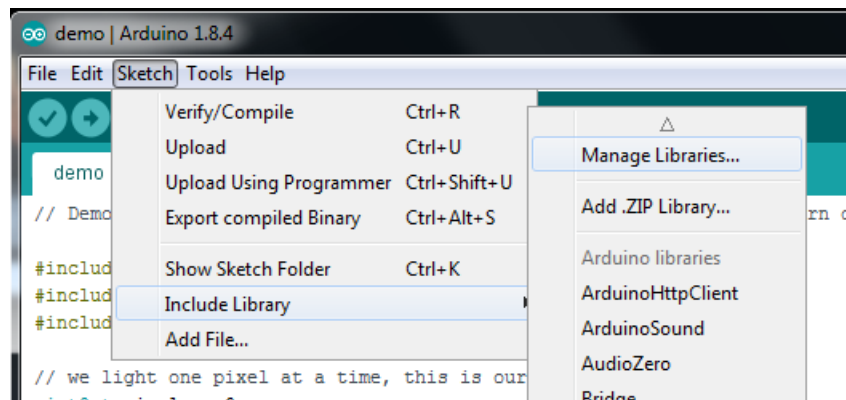
You will need to install these libraries, which are needed by the sketch:

- Adafruit EPD (ePaper display) library
- Adafruit GFX library
- Adafruit BusIO
- Adafruit NeoPixel library
- Adafruit variant of the WiFinINA library

You can manually install the libraries needed for this sketch using the links below. The sketch uses a variant of the Arduino WiFinINA library developed by Adafruit in order to support the Airlift coprocessor. Make sure you use this version of the library with your sketch, which is included in the links below.

You will also need to setup an Adafruit IO account if you do not have one already. [This learning guide about Airlift and Adafruit IO \(https://adafru.it/ELW\)](https://adafru.it/ELW) will help you get started with Adafruit IO. You will need a user name and key in order for the sketch to retrieve the current date and time from Adafruit IO.

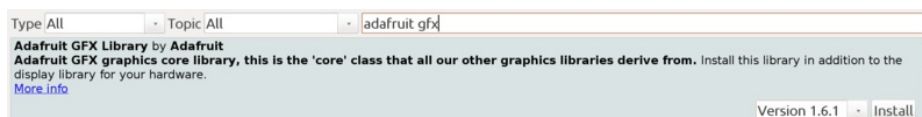
Open up the Arduino library manager:



Search for the **Adafruit epd** library and install it

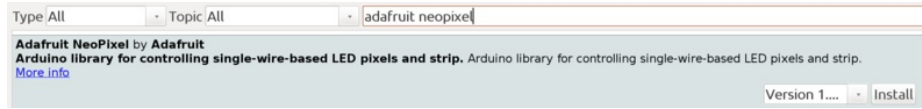


Search for the **Adafruit gfx** library and install it



If using an earlier version of the Arduino IDE (prior to 1.8.10), also locate and install **Adafruit_BusIO** (newer versions will install this dependency automatically).

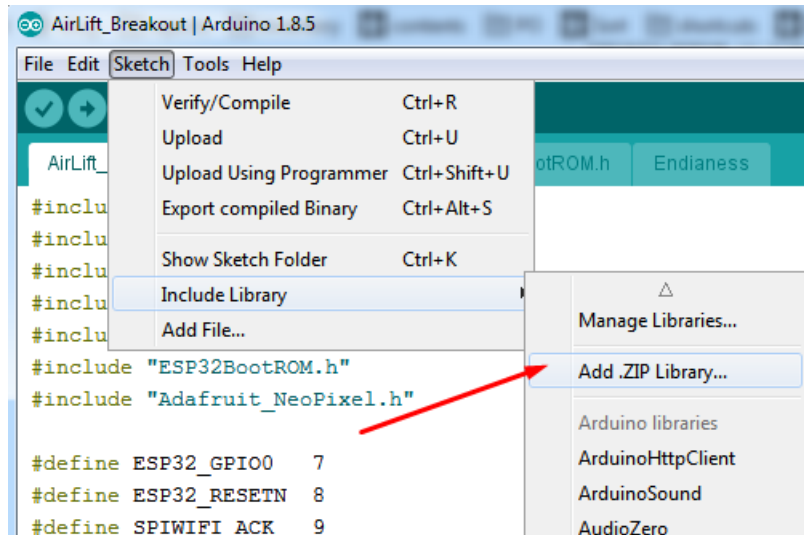
Search for the **Adafruit neopixel** library and install it



To install the **Adafruit WiFININA** library, click the link below to download the library as a zip file:



Within the Arduino IDE, select **Install library from ZIP...**



And select the zip files you just downloaded.

Installing the Sketch

There are two files used by this sketch: the **secrets.h** file and the main project sketch file. The **secrets.h** file contains the WiFi connection credentials as well as the Adafruit IO account details. This information must be entered before running the sketch.

You can download a skeleton of a **secrets.h** file from the window below, just fill in the details for the WiFi access point and Adafruit IO account.

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The main project sketch is named **adafruit_airlift_calendar.ino**. A customization that you can do with the calendar is choose how to highlight the current day in the calendar. You have the option of showing the current day as a red circle, black circle, bold text or no highlighting, which displays the current day just like any other day. Uncomment the option you will want to use.

```
enum dayhighlight {RedCircle, BlackCircle, Bold, None};

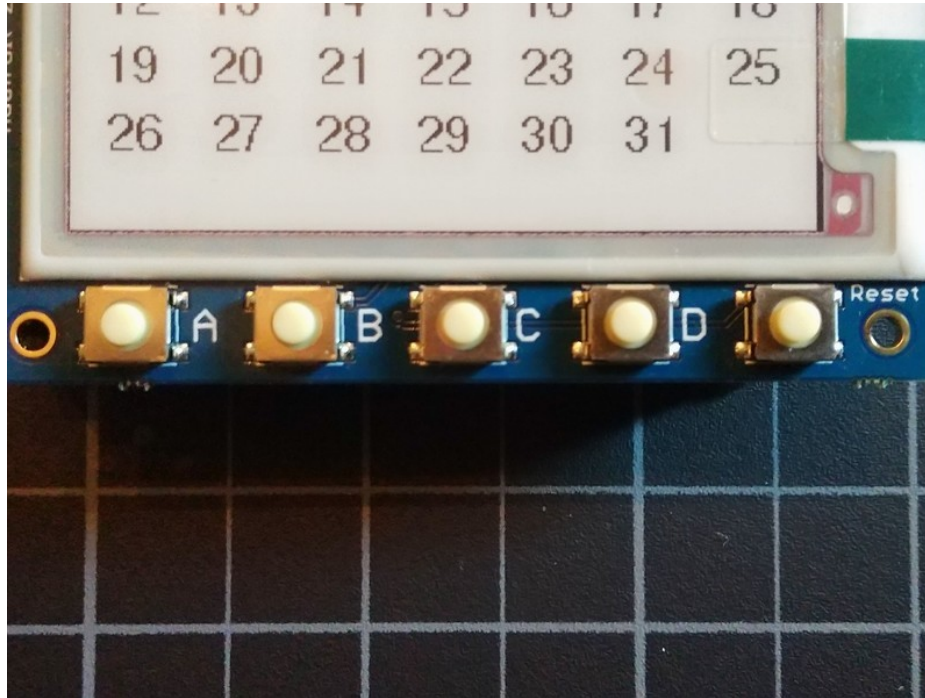
// pick one of these options for displaying the current day in the current month

dayhighlight currentday = RedCircle;
//dayhighlight currentday = BlackCircle;
//dayhighlight currentday = Bold;
//dayhighlight currentday = None;
```

The sketch is available for download below.

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Use



The shield includes 4 programmable buttons, labelled "A" to "D". These buttons are used to change the month of the calendar. When first booting up the device or when pressing the reset button, the display shows the current month with the current day highlighted with a red circle. Pressing buttons "A" or "C" will move to the previous or next months, respectively. Pressing button "B" will switch back to the current month.

The "D" button is used to move the calendar either forward or backward by one year. By default, the button will move to the same month in the next calendar year. However, if the previous month button "A" is pressed, then button "D" will instead move to the previous calendar year. If button "B" or "C" is pressed for the current or next month, then button "D" will again move to the next calendar year. Press button "D" successive times to move forward or backward multiple years.

Status LED

The Metro M4 Express Airlift also comes with a single NeoPixel. This project uses the NeoPixel as a project status indicator.

A **blue** NeoPixel status means the sketch is currently accessing the Internet, either connecting to the WiFi hotspot or accessing Adafruit.io to grab the date and time.

A **green** NeoPixel status means the sketch is currently updating the display for the specified month and will turn off when it is completed. This can take a few seconds since ePaper displays are not very speedy at refreshing their screens.

A **red** NeoPixel status means there is a network communication issue. Pressing the buttons will have no effect if the NeoPixel is showing one of these status colors. Wait for the NeoPixel to turn off before pressing one of the buttons to change the month display.

