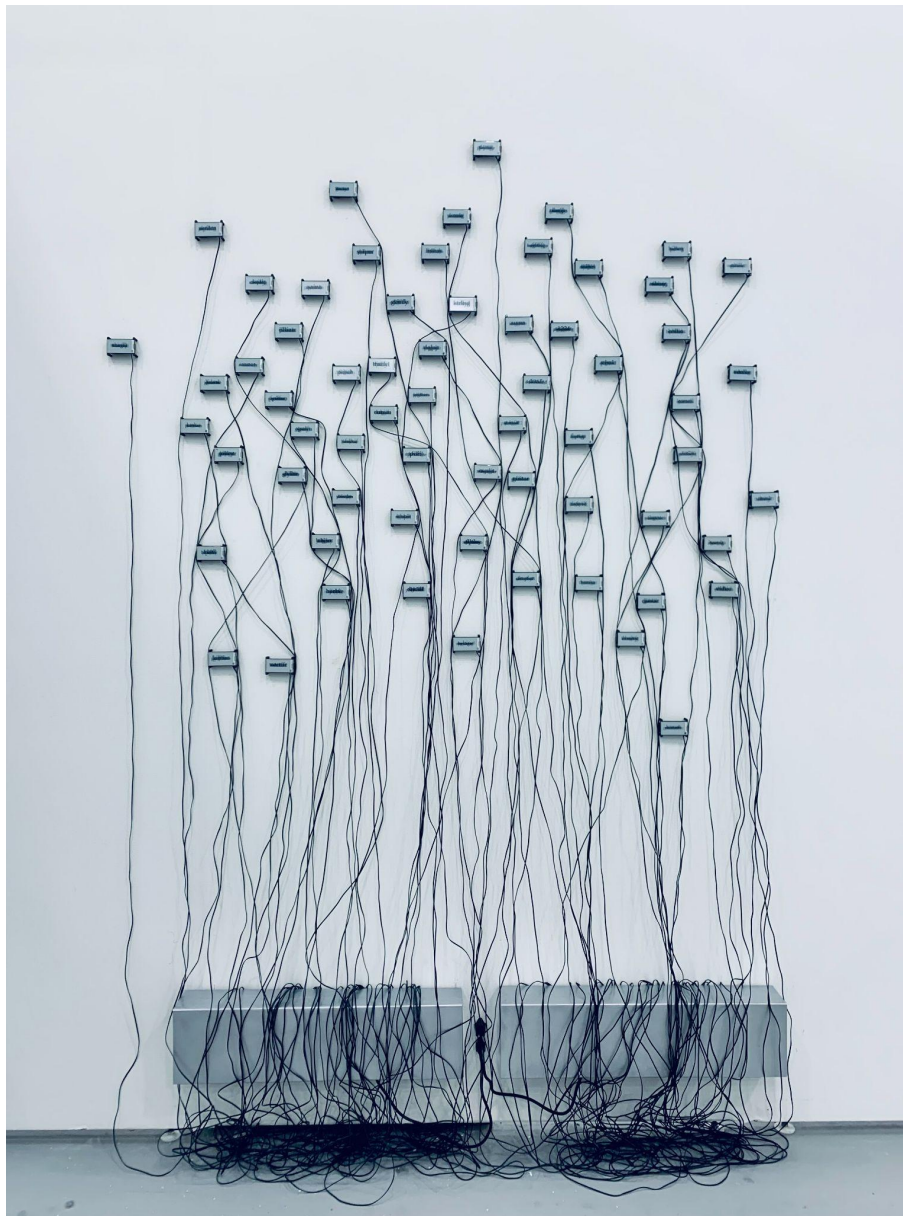


PASSWORD BREACH

BATTENS VERSION

BY RAFAEL LOZANO-HEMMER



Version : 2023-06-14

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GENERAL IMPORTANT INFORMATION

This short section must be read for proper operation.

PASSWORD BREACH (2021)

BY RAFAEL LOZANO-HEMMER

Technique

Electronic-paper displays, ESP32 microcontrollers, wifi network, custom software.

Description

In “Password Breach,” passwords extracted from salient historical data breaches are presented as an additive smear on 77 small electronic-paper displays which synchronise and reset intermittently. The breaches include the Panama Papers, Ashley Madison, and RockYou2021.

Infamous large-scale password breaches, such as those that affected the companies RockYou and Ashley Madison reveal the vulnerability and interconnectedness of digital and lived realities. As such, “Password Breach” brings to the fore how random, intuitive, or personalised combinations of 6 to 20 characters are heavily relied-upon, yet fallible gatekeepers of private caches of data whose stakes range from the personal to the global.

Through displaying these private “codes” in public space in seemingly random sequences, “Password Breach” reveals curious aspects of human thought processes, which draw upon nostalgia, fetish, taboo, and tenderness to build digital locks for private information.

Operation

Please refer to [Appendix I - Installation](#) for detailed system information, glossary of terms, and wiring diagram.

Note: The e-paper displays and the ESP32 microcontrollers should be attached. Together, they will be referred to in this manual as a “module” (see: [Glossary of Components](#)).

1. Assemble the modules. Match the orientations of the two pieces by aligning the number of pins on the microcontrollers to the corresponding number of holes on the display.
2. Place the modules on a wall according to the supplied template (see: [Placement Instructions](#)).
3. Power on the included network router. It should take around 2 minutes to boot.
4. With the power buttons under the battens turned off, plug in the power cords.

5. Test one module by connecting its leads to the green terminal blocks. With a small screwdriver, press into the orange pin to release the spring of a terminal. Insert the lead, then release the pin to lock the lead into place.

Note: Ensure that the positive leads (grey-dashed wires) match the positive terminals and the negative leads (black wires) match the negative terminals.

6. Turn the power switch ON. If a red LED on the rear of the module turns on, the module is successfully connected. If not, turn the power OFF immediately and double check the wiring polarity before proceeding.
7. Connect the rest of the modules' wires to the terminal blocks. Always double check that the leads match the correct terminals before connecting.
8. Connect the appropriate jumper wires between each corresponding terminal block. The green wires connect the positive terminal blocks and the black wires connect the negative terminal blocks.
9. If the network router is properly set up, the modules should connect automatically.
10. To turn the piece ON or OFF, press the power button on the bottom of the battens.

Maintenance

Please do not clean display surfaces with Windex or soap. Use a lint-free cloth and LCD screen liquid cleaner, such as Kensington Screen Guardian found in most computer stores. While cleaning the displays, avoid applying too much pressure onto its surface, otherwise the displays could swivel and it will mess up the alignment of the artwork.

The metal battens can be cleaned with regular all-purpose cleaner and a soft cloth to prevent scratches on the surface. Take care to keep the interior of the battens free from liquid. Do not use harsh cleaners or rough sponges.

We recommend cleaning the piece at least every two months.

Placement Instructions

1. Refer to the supplied template diagram for positioning the modules. The piece should be installed on a flat wall.
2. Place spacers in the four corners of the aligner tool, then place the module on top. Align the module on the wall by aiming the bubble in between the two lines.

3. Gently hammer nails into the four holes to secure the module to the wall. The type and length of nails used will depend on the wall material.
4. Release the band holding the wires in place. Straighten out kinks in the wire holding the end of the wire closer to the module and pulling away from it with a screwdriver.
5. Remove the aligner tool and repeat the process for all modules.
6. Connect the wires according to the wiring diagram (see: [Wiring Diagrams](#)).

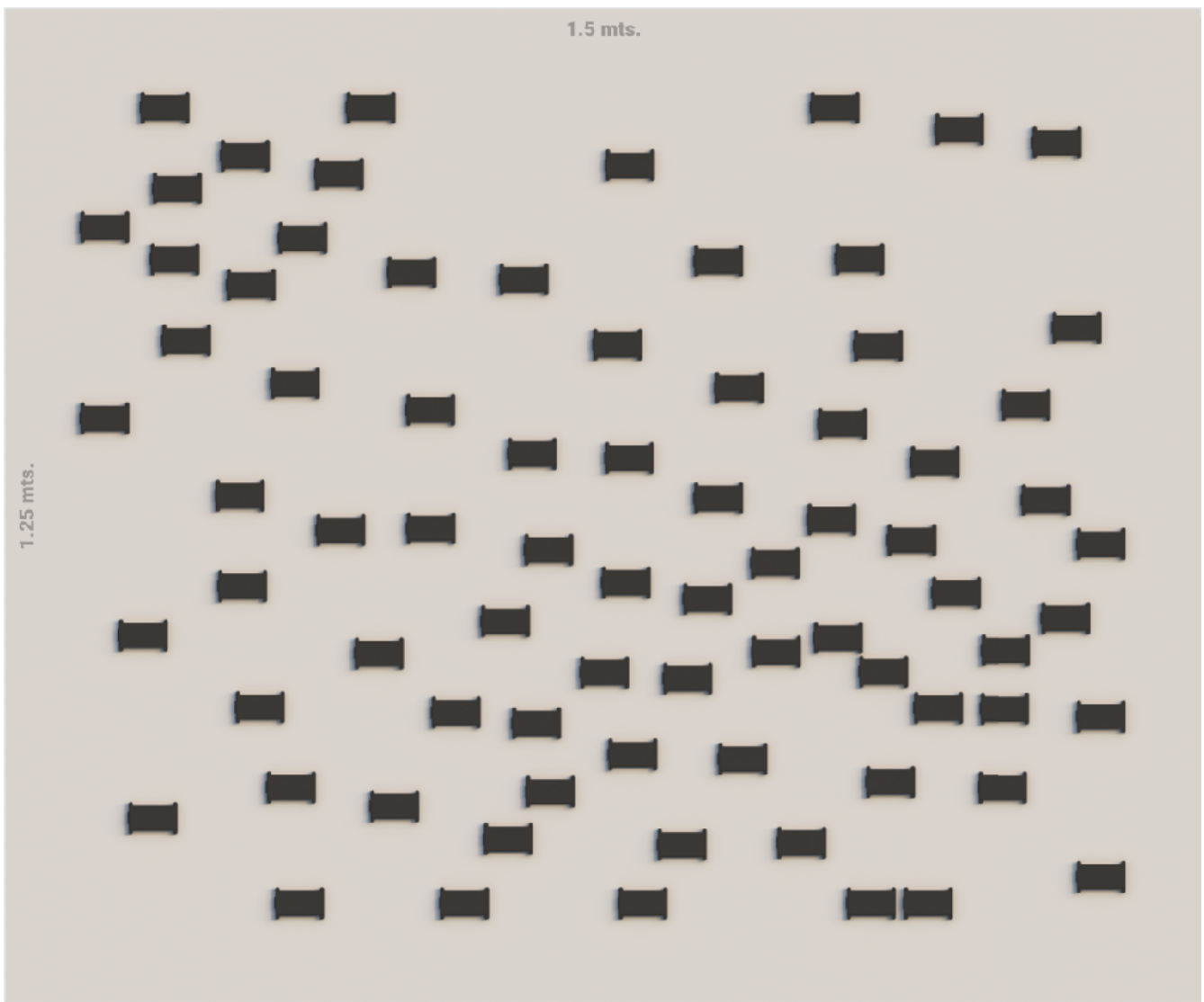


Fig. 1: Template diagram



Fig. 2: Using the aligner tool

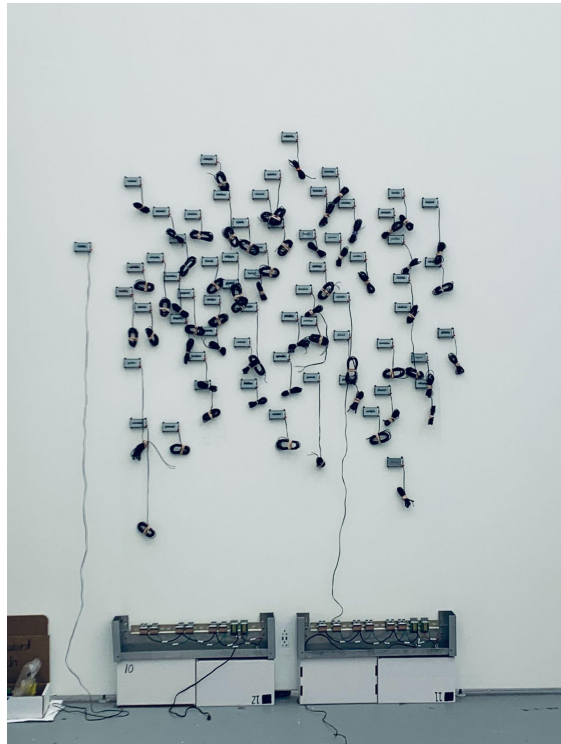


Fig. 3: Mounting process



Fig. 4: Straightening the wires

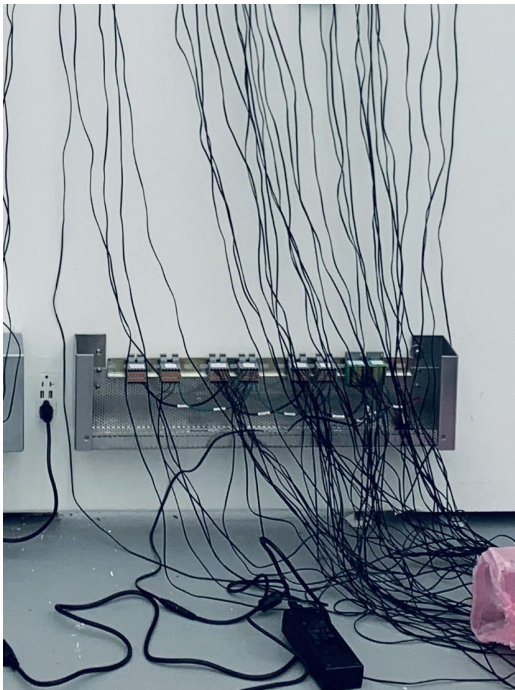


Fig. 6: Wiring the circuit

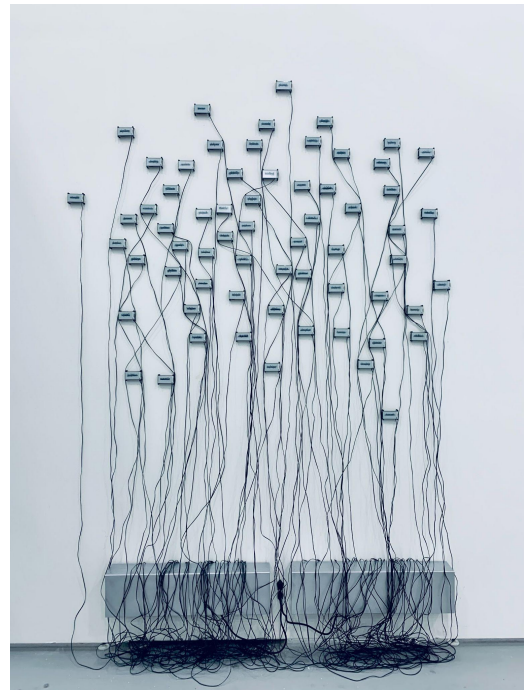


Fig. 7: Final assembly

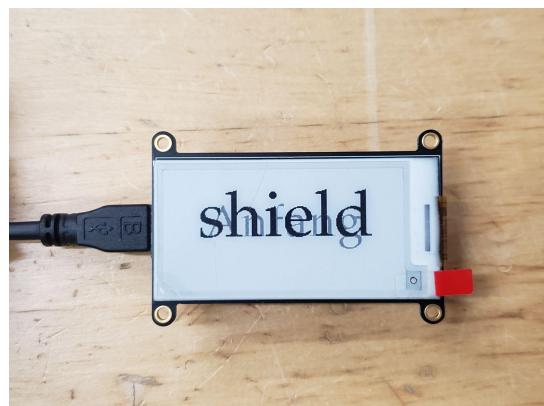
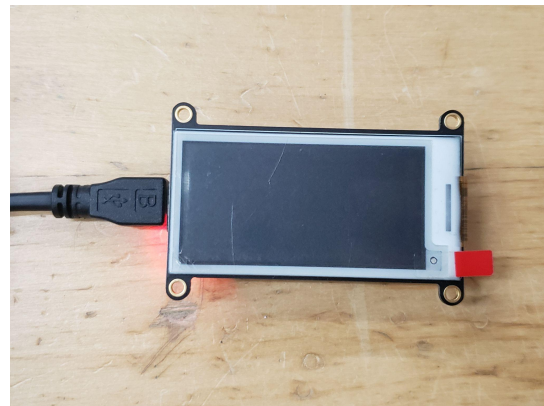
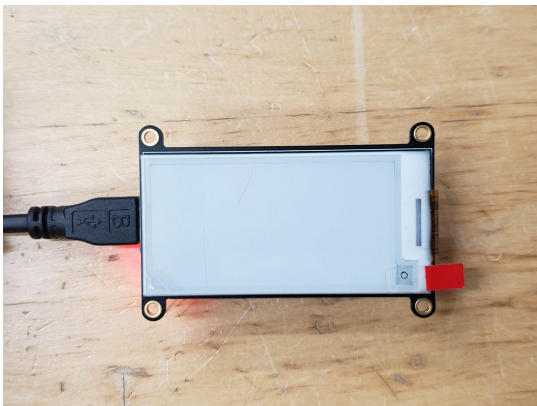
DETAILED TECHNICAL INFORMATION

Normal Software Operation

When the artwork powers on, the modules enter a startup period lasting a maximum of 30 seconds where they attempt to connect to the network router's WiFi signal. During this period, the screens will be inanimate, but a red LED on the rear of the module will be lit. Usually, the modules will only take around 10 seconds to connect to the network before proceeding to the next step. If the startup period lasts the full 30 seconds, the modules could not detect a signal (see: [Preliminary Troubleshooting Steps](#)).

At the end of the startup period, regardless of whether a module is connected to the network, the displays will flash a black screen three times before displaying the word, "Anfang" - German for "beginning." Each module will then proceed to cycle through a repository of passwords, refreshing every four seconds. With every refresh, the remnants of the previous word can be seen in the background. Due to the nature of the devices, the timing of the refresh may differ slightly between one module to another.

Every 40 seconds, all the displays will show the same word, flash twice, clear the screen, then display a new, unique word. The process then repeats from the start.



Preliminary Troubleshooting Steps

After turning on the power switch, nothing seems to happen.

Does a red LED light up on the rear side of the modules? If not, unplug the power cord from the power source. Turn off the power switch immediately and double check the wiring to match the wiring diagram.

The display shows “Anfang,” but doesn’t change to another word.

The SD card inside the module or the file it contains is corrupted. Pull out the SD card and try to open the file inside named passwords.txt. If you can see the SD card on your computer, but cannot open the file, retrieve the same file from another module’s SD card and replace the file on the original. If you can’t see the SD card at all, reformat the SD card and then attempt the previous step. If the SD card can’t be formatted, replace it with a new one. The SD cards need to be formatted in FAT16. While formatting with an OSX computer, make sure that you’ve kept the SD card’s partition map scheme as Master Boot Record, not GUID or Apple Partition Map.

Every 40 seconds, the displays show “FAILED!” in synchronisation.

The SD card on the main module (see: [Glossary of Components](#)) cannot be read. Remove then re-insert the SD card. The module should automatically read the card, if possible. If the problem persists, attempt the steps from the previous troubleshooting scenario . Be careful not to replace any other files on the main module’s SD card.

The displays never show the same word in synchronisation.

There is an issue with the modules connecting the network router’s WiFi network. Restart the router and then restart the piece. If the problem persists, either reconfigure the router or contact the studio.

Some/all modules are not turning on.

Open the batten box so you have access to all power connections. Turn the power Off to all displays.

Test one module by connecting its leads to the green terminal blocks. With a small screwdriver, press into the orange pin to release the spring of a terminal. Insert the lead, then release the pin to lock the lead into place.

Note: Ensure that the positive leads (grey-dashed wires) match the positive terminals and the negative leads (black wires) match the negative terminals.

Turn the power switch ON. If a red LED on the rear of the module turns on, the module is successfully connected. If not, turn the power OFF immediately and double check the wiring polarity before proceeding.

Connect the rest of the modules' wires to the terminal blocks. Always double check that the leads match the correct terminals before connecting.

Connect the appropriate jumper wires between each corresponding terminal block. The green wires connect the positive terminal blocks and the black wires connect the negative terminal blocks.

Once the verification is done, close the batten box while preventing pinching any cable in the process.

Troubleshooting Assistance

Prior to contacting the Antimodular Studio with a problem about your artwork, please ensure that you went through the preliminary troubleshooting steps outlined in the previous section.

The troubleshooting process will vary depending on the problem. In order to make the process easier, it is recommended that you collect and send the following information to the studio:

- Date and time when the problem first happened;
- Description of the problem;
- Actions taken so far and conclusions;
- Detailed photographs (or videos) displaying the problem;
- Detailed photographs (or videos) of the suspected faulty component;
- Detailed photographs (or videos) of the whole artwork and its surroundings;
- Personnel involved.

Support (Contact Us)

If you would like support for the piece, please feel free to call Lozano-Hemmer's studio in Canada:

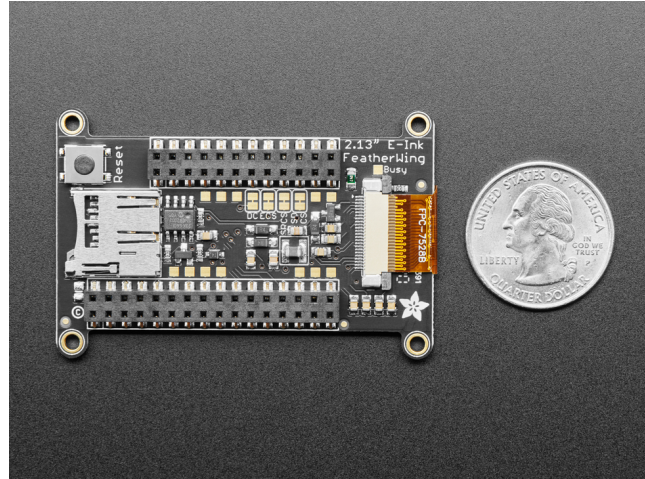
Antimodular Research
4462 rue Saint-Denis
Montréal, Québec, Canada
H2J 2L1
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info@antimodular.com
www.antimodular.com

APPENDIX I - INSTALLATION

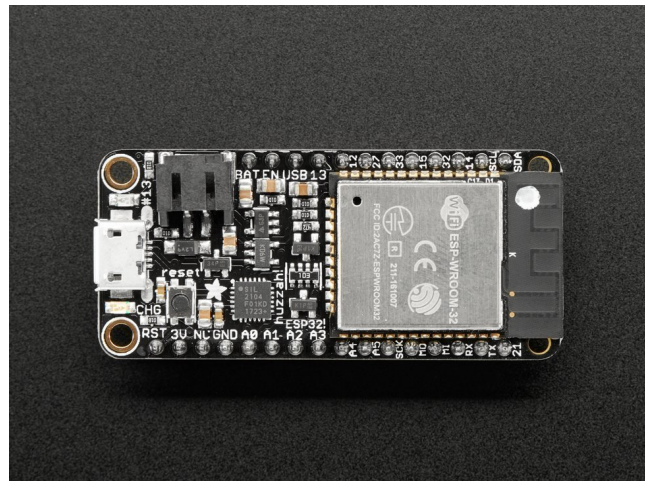
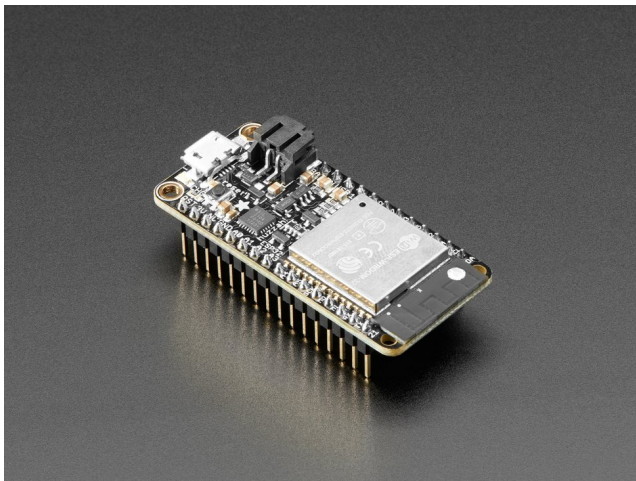
Glossary of Components

Component	Description
Electronic-paper display	A display that mimics the texture of real paper. Electricity is only needed to change the image which retains even when powered off. Attached to a microcontroller.
ESP32 microcontroller	The processor board responsible for running code and connecting to WiFi. The version used is the Adafruit Feather Huzzah32.
Module	An assembled combination of an e-paper display and an ESP32 microcontroller.
Main module	A specific module that sends messages to the others via WiFi. Its SD card contains files not included in the others, namely <i>main.txt</i> and <i>settings.txt</i> .
SD card	A microSD card found in every module. Inserts into a slot on the rear of the display. Contains a file called "passwords.txt," which is the same file on all of them.
Wire leads	A combination of two wires that connect the modules to the terminal blocks. The positive lead has a grey dashed line while the negative lead is all-black.
Terminal block	A plastic block containing a set of 12 terminals where the modules' wires are connected. Each block is labelled "positive" or "negative" on its side.
Jumper wire	Connects different terminal blocks together. Positive jumper is green, negative jumper is black.
Power supply unit	One power supply unit per batten. Connects to the green terminal block.
Batten	A polished metal enclosure that holds the terminal blocks and power supply unit.
DIN rail	Holds the terminal blocks in place. Attached to the batten.
Power switch	Located on the bottom of the batten.

Images of components, for consultation:

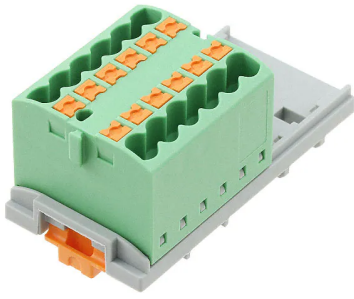


Electronic-paper display



ESP32 microcontroller (Feather Huzzah32)

Note: There are either 12 or 16 pins on the two lengthwise edges of the microcontroller and a matching number of holes on the rear of the display. Match these numbers when attaching the two components.



Terminal block (main)



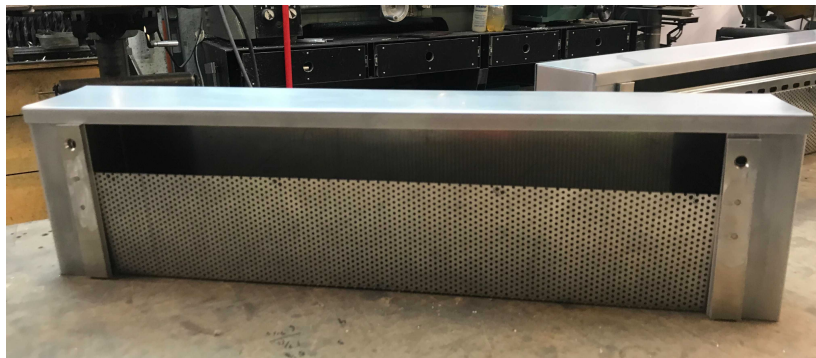
Terminal block



Aligner tool



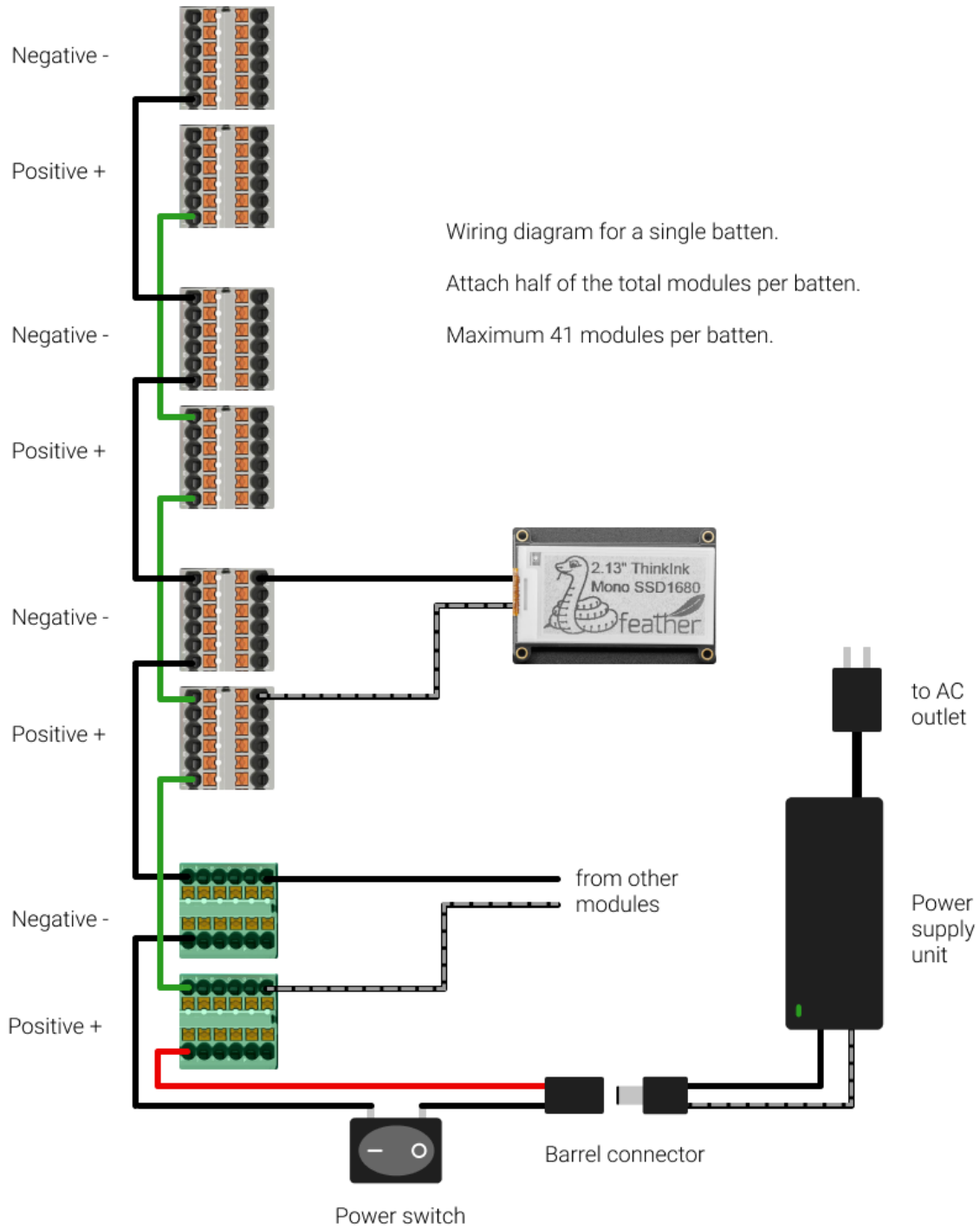
Power supply unit



Batten

Wiring Diagrams

In order for the piece to run properly, the modules should be connected according to the following diagram.



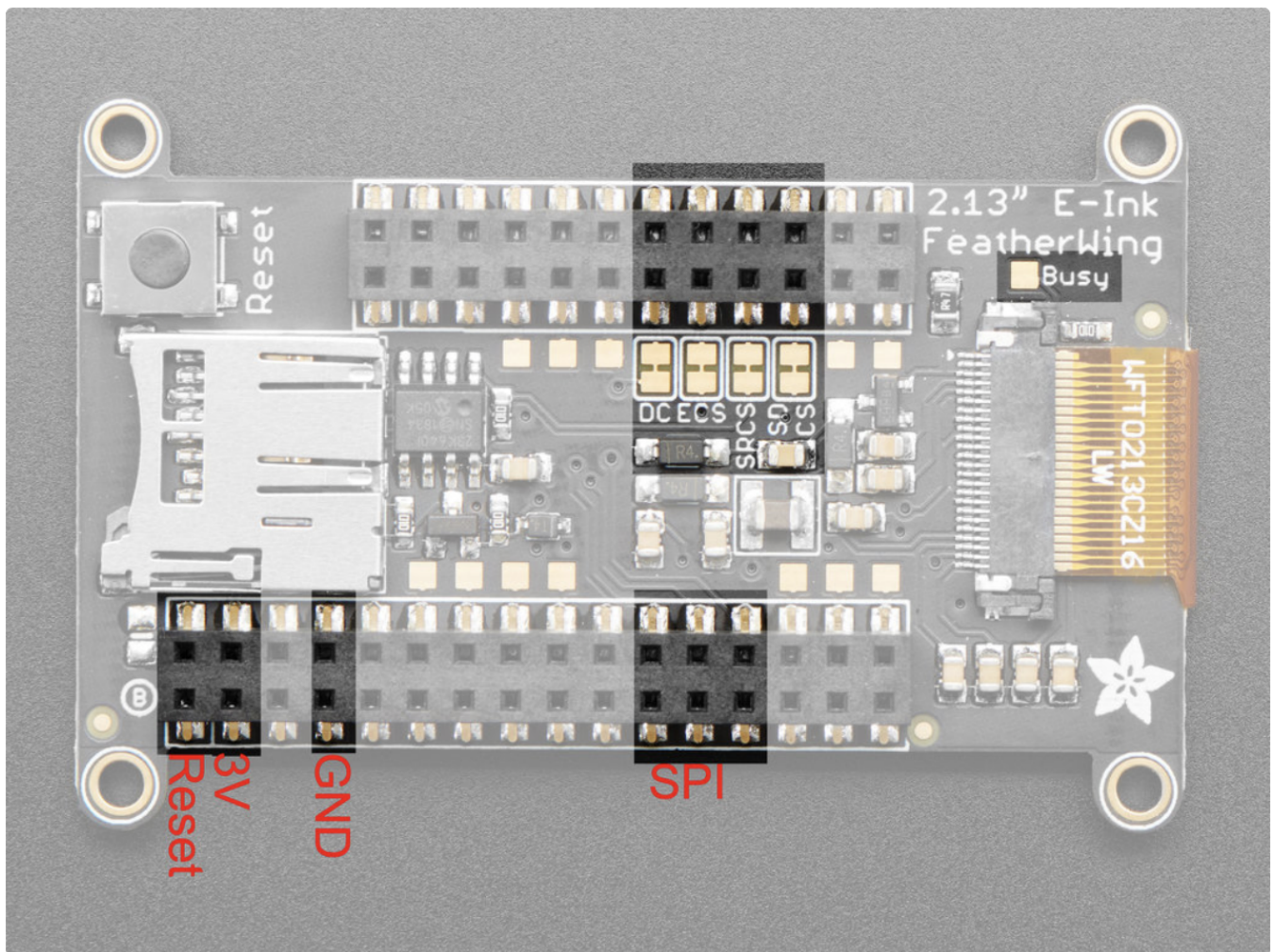
APPENDIX II - TECHNICAL DATA SHEETS

Power supply unit

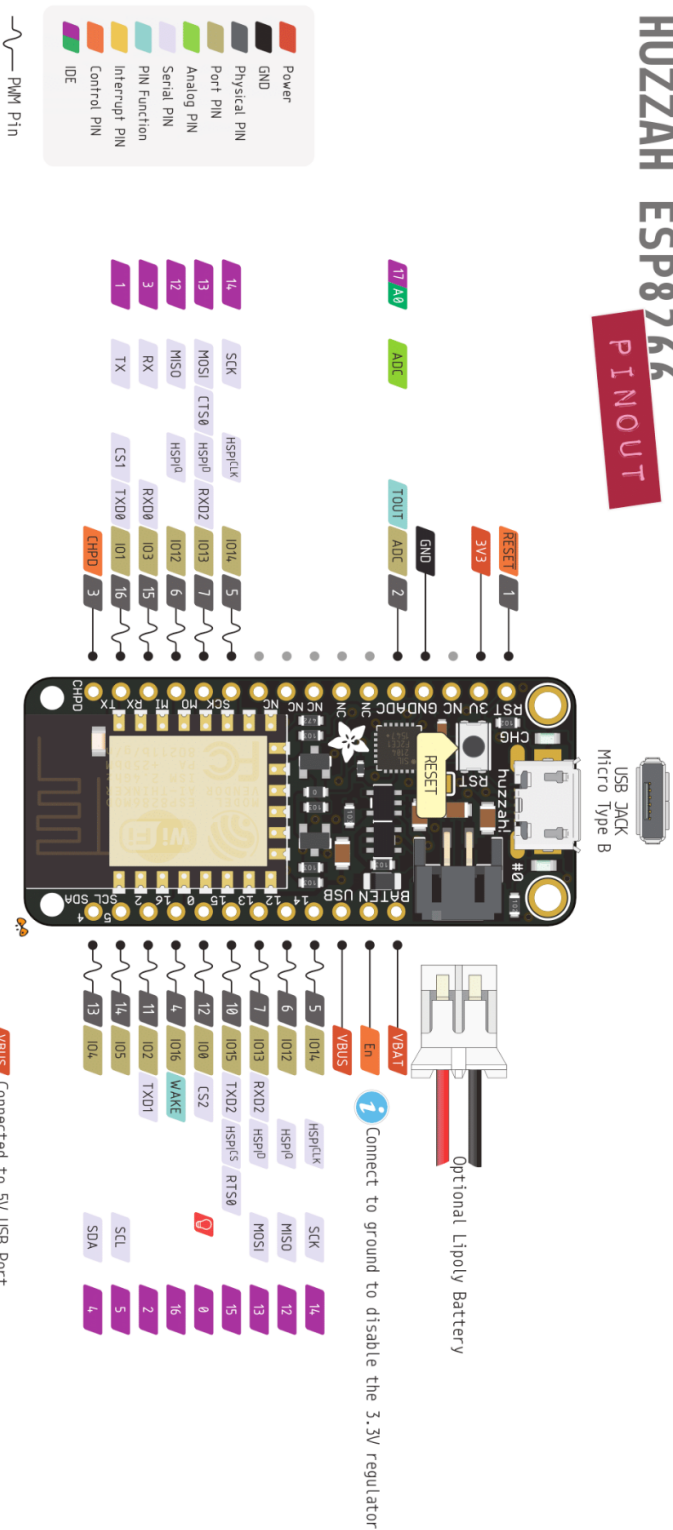
Input rating	110-240v AC
Input plug	IEC
Output	5vDC 10A max.

Electronic-paper display

Model	Adafruit 2.13" Monochrome eInk / ePaper Display FeatherWing with SSD1680
Resolution	250x122
Height	61.3mm
Width	40.2mm



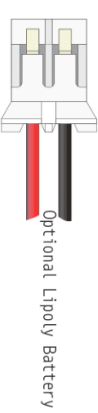
Huzzah Feather ESP8266



Absolute MAX per pin 12mA, 6mA recommended

Absolute MAX 85mA for the entire package

<https://www.adafruit.com/product/2821>



VBAT En Connect to ground to disable the 3.3V regulator

VBUS Connected to 5V USB Port **Absolute** MAX 500mA

VBAT It's the positive voltage from to JST Batt Jack

3V3 3V3 output from regulator **Absolute** MAX 400mA

